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IT is reported that the Russian Government has recently issued a decree making the use of the metric system universal in Finland. For some time past there has been a decimal coinage in use in that province and the metric weights and measures have been obligatory in the custom houses, the post offices, and on the state railways; but after the close of this year the employment of the old system, which is as barbaric as our own, will not be legally recognized in any establishment, public or private. The metric system is already in general use among physicians, chemists, and other scientific men in Russia, and it is thought that this present decree concerning Finland may foreshadow its adoption throughout the country. For this expectation, however, the circumstances present but slender grounds. The nationality, commercial relations and other local conditions of Finland do not make it typical of the Empire at large, and it has never been the quarter where steps of legislation have been first taken, which were afterward to be extended to the remainder of the vast domains of the Czar.

ACCORDING to all accounts there has been an important increase in the flow of natural gas in the western Pennsylvania fields during the past three months, due to the bringing in of a number of new wells which have been producing largely. The new discoveries have been made principally in the Allegheny and Washington fields, southwest of Pittsburg, and some of them have been in virgin territory. At Grapeville one well is thought to have opened an entirely new horizon. If this opinion be correct the development possesses great importance, since the wells of that productive district have hitherto drawn from one reservoir only. With the increased supply of gas and the greater economy exercised in its use, there has been less talk in Pittsburg about advancing rates on the part of gas companies, or changing from gas to coal on the part of consumers. The increased production of natural gas, however, can not be considered as more than temporary. Within a short time the same steady falling off which became so marked in 1890, and the first part of 1891, will doubtless be resumed. Nevertheless, the new discoveries show that the natural reserves of gas have by no means been exhausted, and that with economy a supply can be depended upon, for domestic and minor industrial purposes, at least, for some years to come.

DURING November 30 mining companies of the United States, which make public statements of their earnings, paid dividends to the amount of $1,442,275, against $1,421.875 in October. The total for the first 11 months of the year is $15,519,871. This amount is far in excess of that paid in the same time in 1890, the total for the latter year being but $13,743,478. This great increase is evidence of the general prosperity in the mining industry of this country. It must be remembered that these figures represent the dividends paid by public companies only and do not include the payments by private concerns and close corporations, which do not publish their earnings. The latter class however, includes many of the largest producers of the United States, such as the Anaconda and Bluebird companies of Montana, the Eureka Hill and Bullion-Beck & Champion companies of Utah, the Aspen and Minnie mines of Colorado, and many of the large iron mining companies of Michigan. If the amounts paid by these concerns were added to the totals of the public companies, it would be shown that the mines of this country pay a larger percentage on the capital invested in them than is received from any other class of industrial undertakings. It is safe to say, moreover, that they have never been operated at so great profit as at the present time.

THE Bureau of the American Republics announces the discovery of vanadium minerals in considerable quantity in the province of Mendoza, Argentina. Vanadium is one of the rare elements for which there is a limited demand, and commands an exceedingly high price, being quoted at $22 per gramme at present. It is used chiefly in the form of ammonium vanadate, as a dye-stuff, producing, in conjunction with aniline, the most absolute black known to the dyers and calico printers. It is similarly used in the manufacture of certain kinds of black ink. The amount required for these purposes is, however, extremely small.

The vanadium minerals are widely distributed, although seldom found in large quantities. The ores in certain districts of Arizona contain a considerable amount of vanadate of lead, and there has been some talk of saving the mineral as a by-product, but the present demand for the vanadium salts being so limited, it is doubtful if such an undertaking would be worth while.

The manufacture of vanadates is in the hands of two or three houses in Great Britain and on the Continent. The price is kept high, because the consumption is so small, and because any serious competition, increasing the supply, would destroy all the profit of the business. Under these circumstances, present uses will have to be greatly extended or new ones developed before vanadium ores will acquire much value. All that can well be done with them at present is to sell them to the manufacturers who monopolize the industry; and a very small amount will satisfy that possible demand.

THE MINERAL PRODUCTION OF VICTORIA AND NEW SOUTH WALES.

A late mail brought a collection of blue-books from Australia, which contain interesting data concerning the mining industry in the various colonies at the Antipodes. Queensland, Victoria, New South Wales and New Zealand, in which are located the most important mines of Australasia, all have very efficient mines departments; and the thoroughness and promptness with which they collect and publish the statistics of the mining industry is commendable.

The report of the mining department of Victoria for the quarter ending June 30, 1891, shows that the quantity of gold produced in that colony amounted to 147,062 ounces, of which 100,514 ounces were from quartz mines and 46,548 ounces from alluvial diggings. Returns from quartz mines producing 90 per cent. of the total gave an average yield of gold of 9 pennyweights 2 grains per ton. Of the total yield, 147,062 ounces, the Ballarat district furnished 50,613 ounces and Sandhurst 35,804 ounces, the remainder coming from Beechworth, Maryborough, Castlemaine, Ararat and Gippsland. The depression in the mining industry of the Colony seems to have passed away, as the total output was 12,698 ounces greater than that of the preceding quarter. The number menengaged in mining also showed an increase, the total number thus

emplo ed being 23,954. The dividendspaid by mining companies aggregated £127,328 8s. The Sandhurst mines have been opened to considerable depth, but operations below 2,000 feet do not seem to be profitable. There are nine shafts in the district down from 3,140 feet to 2,640 feet, but in two mines only has payable ore been found below the 2,000 feet level.

Little progress has been made in Victoria in mining for other metals than gold, but a promising start has been made in tin mining in the Mount Wills field. Mr. R. A. F. MURRAY, Government Geologist, states concerning these deposits, that there is a large quantity of ore containing tin in payable quantity actually in sight, with fair likelihood of the chutes below being equally rich, and that with economical and intelligent mining the majority of the lodes now opened are likely to prove profitable.

From the report of the Department of Mines of New South Wales for 1890 it appears that the mineral production of that Colony during that year was valued at £5,283,840, an increase of £503,474 over 1889. This was a notable increase, considering that the production of coal fell off £353,760 on account of a strike which paralyzed that branch of the mining industry for several months. The increase in the production of the metals was, consequently, £857,234. Most of this came from the silver-lead mines, the great Broken Hill mine prominent among them, the output of which in 1889 was valued at £1,977,909, and in 1890, £2,764,141, the increase amounting to £791,356, or more than 92 per cent. of the total increase in the production of the metals, precious and base. Unfortunately, the statistics of production of lead and silver are not given separately, except in so far as the two metals were actually smelted and refined in the Colony.

An interesting feature in these statistics of the mineral production of New South Wales is the gradual increase in the output of gold during the past two years. From 1881 to 1888 there was a pretty steady decrease from 149,627 ounces in the former year to 87,503 ounces in the latter. In 1889 the output rose to 119,759 ounces and in 1890 to 127,760, the latter being the largest for any year since 1882. The additional yield was due to the opening of new mines, and the prospects in the new Pambula and Peak Hill districts are considered such that there is every likelihood that the outturn of gold in the Colony will continue to increase. The number of men engaged in this branch of the mining industry in 1890, was 12,589, 2,397 more than in 1889, and the average yield per man was £36 11s 3d., or £6 0s 6½d. less than that of 1889. The total amount of gold won in the Colony of New South Wales from 1851 to 1890, both years inclusive, has been 10,220,116 ounces valued at £38,075,172, the maximum being attained in 1852, when 818,751 ounces were produced.

The production of tin in New South Wales in 1890 was less, both in quantity and value, than in any year since 1872, when the tin-fields were first opened, the amount being but 3,410 tons of ingot tin and 259 tons of tin ore (exported), valued at £329,841, against an aggregate output valued at £415,171 in 1889. The falling off was mainly due to the fact that the shallow deposits of stream tin have been, in a great measure, exhausted, while the deep deposits and the lodes have so far been worked to a limited extent only. The total production of these tin fields has been 97,458 tons of ingot tin and 17,250 tons of ore (exported), valued at £9,255,384.

The output of copper also shows a falling off, amounting to but 3,165 tons of ingot and 580 tons of ore and regulus (exported), which were valued at £173,311, against an amount valued at £206,641 in 1889. The production of copper in New South Wales has been undergoing an almost continuous decline since 1883, the reason being that many of the mines are not very favorably situated as regards transportation facilities and do not pay to work at the recently prevailing price of the metal.

Considerable attention is being paid to the iron ore deposits of the Colony and to the question of iron making, which is an industry that has not yet been established. There are, as is well known, large beds of rich iron ore in New South Wales, together with unlimited supplies of coal and limestone suitable for smelting purposes. Manganese, chrome and tungsten ores, for use in making certain kinds of steel, are also available. There are three localities favorably situated for the establishment of blast furnaces, Mittagong or Picton, in the southwestern coal field, Wallerawang or Lithgow, on the edge of the western coal field, and Rylstone, also in the western coal field. The quantity of iron available for works in the first district is estimated approximately at 8,234,000 tons; for the second, 2,484,000 tons; and for the third, 2,226,000 tons; a total of 12,944,000 tons, containing 5,853,180 tons of metallic iron.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.

Explosives and Ordnance Material, considered with reference to some recent experiments with emmensite, gelbite and aluminum bronze. By Stephen H. Emmens. Published by the author. Baltimore, 1891, pp. 93. Illustrated.

Roll Turning for Sections in Steel and Iron. Working drawings for rails, sleepers, girders, bulbs, ties, angles, etc., etc., also blooming and cogging, for plates and billets. By Adam Spencer. Published by E. & F. N. Spon, London and New York, 1891. Fifty-six plates. Price $17.00.

NEW PUBLICATIONS.

MODERN AMERICAN METHODS OF COPPER SMELTING, by Edward Dyer Peters, Jr., M. E., M. D. Second Edition. Revised and enlarged. Pp., 398. Profusely illustrated. The Scientific Publishing Company, 27 Park Place, New York, Publisher. 1891.

Technical books as a rule have but a small circle of readers, and a still more contracted one of purchasers, and it is a rare occurrence to have even the small edition, that is usually published, exhausted for many years. But when a work that is so strictly technical as to be confined to one small class of professional men is published in an edition of double the usual size, and this exhausted within less than four years of its appearance, and a second edition is practically exhausted before it is out of press, it is a certain proof that its merits are so plain and conspicuous as to require no elucidation by reviewers or critics.

This is the case with *Modern American Methods of Copper Smelting*, by Edward D. Peters, Jr., M. E., M. D., published by the Scientific Publishing Company, the second edition of which is just out of press and now lies before us. It is a handsome volume of about 400 pages, being nearly one-third larger than the former edition, while the paper and type are unexceptionable. But the most striking feature of the book is its numerous and handsome cuts: many of them being large, working drawings of furnaces of the most modern type, and of the greatest value to engineers and students. After consulting Kerl, Plattner and especially Percy, and finding how the Phœnicians and Japanese used to do it several centuries ago, and discovering that the latest cuts of furnaces given by them were discarded a generation or two ago, it is refreshing to turn to drawings of furnaces as they are built to-day, even the latest improvements in the large new Argo and Anaconda reverberatories being here given in full detail.

This is essentially a practical book, the author having very properly assumed that the theoretical part of metallurgy can be found in existing text books, and that any attempt to combine both theory and practice would not only lessen the peculiar value of the work, but also make it too large and costly. Its opening chapters contain a description of the ores of copper and their distribution in North America. Then follows a very useful chapter on the methods of assaying best suited to the copper smelter. The electrolytic assay of copper is admirably deecribed by Mr. Francis L. Sperry, late chemist to the Canadian Copper Company, the author no doubt feeling that it was best to entrust this subject to a person whose daily duties require him to keep abreast of the times.

The next three chapters treatof the roasting of the pyritous ores in lump form, and are exceedingly full and practical, especially the section on heap roasting, which is by far the most detailed and useful essay on this subject that has ever been published. Everything connected with this important operation is described in detail, beginning with the location and preparation of the roast-yard, and following every detail of the process, until the roasted ore is finally delivered in the smelter bins. Full estimates as to cost of both apparatus and process are furnished, and a valuable improvement in this ancient method introduced at Sudbury, Ont., under the author's management, and known as the "V-Method" of roasting, is described and figured.

Among the most practical and valuable chapters in the book are the two that follow, on the "Calcining of Ores in a Finely Divided Condition." The fullest instructions and estimates are given as to building the various varieties of calcining furnaces, and a large amount of new material, with several large illustrations of the modified Brückner cylinder, and the improved Spence automatic furnace, is given.

At this point occurs the only theoretical chapter in the entire book, and this bears so directly on the process of calcination, and is of such importance to the understanding, and intellectual conducting, of this most important branch of metallurgy, that it is in reality of the utmost practical value. The importance of thorough calcination is known to all experienced smelters, and Dr. Peters goes so far as to term it "The key to all the after-coming operations."

The next five chapters, which treat of the smelting of copper ores in blast-furnaces, were pronounced by those who criticised the first edition of this book "The most valuable and important contribution to modern metallurgy that had been made in this generation." In the second edition much has been added, and the subject has been brought strictly up to the present date, though the instructions and advice given in the first edition were so far in advance of the times that the metallurgical world as a whole has barely caught up to them.

The succeeding chapter relating to the smelting of the nickel-copper ores of Ontario is entirely fresh matter, and is of great importance to a large class of readers. Dr. Peters was the first metallurgist to recognize the ease and profit with which these low-grade ores could be treated, provided the works were on a sufficiently large scale and exactly adapted to the circumstances. Under engagement with the Canadian Copper Company, he built at Sudbury, Ont., the first and only successful works for treating the pyritous nickel-copper ores that are peculiar to that district. With two furnaces, 250 tons of ore were smelted daily into a rich nickel-copper matte, while the arrangement of the entire plant (including probably the most extensive and perfect roast-yard on this continent) was pronounced by members of the American Institute of Mining Engineers, at their Ottawa meeting, to be the most perfect and economical that they were familiar with.

Since that time several other companies have erected an almost exact duplicate of these works, and the treatment of the Sudbury nickel ores is now considered comparatively simple. But we must remember that there is a wide difference between originating a metallurgical enterprise without the slightest precedent to guide one, and in direct opposition to the opinions of several well-known metallurgists, and making a complete success from the start, or in simply copying the work already done by him who was the pioneer and was obliged to overcome all the difficulties of a new enterprise in a wild country.

But perhaps the most extensive and important additions and alterations in Dr. Peters' book have been made in the succeeding chapters on reverberatory smelting. In the first edition there were excellent cuts and estimates of these important furnaces; but since the appearance of that edition extensive improvements have been made in this direction, the capacity of the ordinary reverberatory smelter having been almost doubled. This result has been due mainly to the energy and talent of Mr. Richard

Pearce, general manager of the Argo works, and to the manager of the great Anaconda smelter in Montana.

Dr. Peters has already planned reverberatories of this nature, having a capacity of some 30 tons per day, and, by permission of his clients, was allowed to publish a set of the working drawings in this new edition, together with two excellent cuts of the Argo furnaces, and full estimates of the material and labor necessary to build them. We know of no metallurgical book that contains so valuable a feature as this set of 11 drawings, in which the principal measurements are given, and the figures being drawn to scale it is easy to obtain any of the required proportions.

The estimates of cost, like all in the book, are taken from actual experience, and all reduced to a single standard of prices. So that by substituting the local prices for the figures given in the book, any superintendent can tell exactly what it will cost him to build the furnace at his own works.

Much new material is incorporated in this section, while the following chapter on "Refining Copper by Gas at Atvidaberg in Sweden" is entirely new; the chapter referring to Swedish practice as well as the section on Gilchrist's method of refining copper on a basic hearth might seem slightly out of place in a work devoted to American conditions, but the author explains in his preface that he has considered it proper to introduce it on account of the important bearing that it has on conditions in our own country; there being many valuable ores in districts where fuel is so bad and expensive that the author believes that the only feasible method of utilizing it is to burn it in gas generators, and by economizing heat by the ordinary method of re-generation, to make the use of fuel practicable that would otherwise be entirely valueless.

Two large inserts are given, containing detailed working-drawings of the gas-generators in use in Sweden for the most wretched fuel, consisting of pine and spruce brushwood, sawdust, etc., and by the use of which the cost of blister-making and refining has been reduced over 50%. The drawings are so plain that they require no explanation, and we hope that they may serve as an entering wedge to attract the attention of smelters to this important subject.

The chapters on the treatment of gold and silver-bearing copper ores, and on the Bessemerizing of copper-mattes, are short and imperfect. We are informed by the author that they are necessarily so, because the first subject belongs properly to the domains of the "wet methods" of treatment; while the latter is in use at only one establishment in the country, which failed to furnish the promised information in time for the issue of the book. Nor does the author desire to go into the details of any part of copper-metallurgy that he is not himself practically familiar with; else the distinctive character of his book would soon be lost, and instead of a truthful record of personal experience, it would soon degenerate into a mere accumulation of more or less reliable statements as made by others.

The table of contents at the beginning of the book, and the detailed index at the end are above all praise. The latter contains no less than fifteen solid pages of references, so that any subject that a person desires to find can be looked up in a moment. This adds greatly to the value and usefulness of the book.

On the whole, it is a monument of patient and conscientious labor, and while, as a matter of course, it will be in the hands of every man interested in copper, who cares to keep up with the times, it should also be introduced into every institution where metallurgy is taught. Our students have been nourished long enough on the works of antiquity, and it is time they should receive a little practical instruction, and learn "how to *do* it," instead of spending their best years in painful studying "how *not* to do it." If the professors of metallurgy are too wedded to their ancient authorities to be willing to give them up, and are too shocked at the rude tearing away of the veil, and the full exposure of all the mysteries to the clear light of day, to be willing to use this work on their own responsibility, they should be forced to it by public opinion, and by the demands of their students for useful instead of useless information.

It will no doubt be a blow to most of them to entirely give up the cherished "*Gestuebbe*" (steep), whose composition and preparation furnished material for several lectures, and whose total abolition cannot be viewed without emotion; and, in the same way, it will be painful to see many of their most valued (and ancient) habits and practices swept away.

But so, we are told, was it painful to the stage-coach drivers to see their beloved vehicles thrown completely aside in favor of the locomotive and saloon carriage. Yet they were forced to bear it. And so in time, though we may not live to see it, will our college professors (at least in New York and Boston) cease to lecture on the liquation of plumbiferous copper at Oker, and the preparation of "steep" at Clausthal, and awake to the fact that what their students want to know is how they erect and manage furnaces at Butte and Leadville.

The paper, typography and general make up of the book are excellent, as is always the case with works issued by The Scientific Publishing Company.

Since writing this review, we have received word that the second edition of this book is completely exhausted, and that a third edition will be issued at once. This is as it should be.

Gold Mining in Dutch Guiana.—A recent official report states that the gold mining industry in Dutch Guiana is steadily increasing. A slight decline in production has occurred during the last two years, but this is to be attributed largely to placer owners building their hopes on companies and syndicates buying their land, and, in the meantime, ceasing the developments necessary to keep up the average returns. The auriferous belt extends throughout the three Guianas from Cayenne to Venezuela in an easterly and westerly direction, in width about 100 miles. The formation of the gold belt is metamorphic slates, schists, and occasional dykes of sandstone and gneiss. Mining has been principally confined to alluvial washings, and very satisfactory results have been so far obtained. The amount of gold exported increased from 475,953 grammes in 1879 to 1,029,777 grammes in 1888. Last year the export amounted to 987,218 grammes. The Government has done nothing to open up the country by the construction of roads, or making the river more navigable for small steamers, to advance the mining interests of the colony. It is only during the past two years that any attention has been given to quartz mining, and the developments during this time have produced highly satisfactory results.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

All letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Canadian Apatite Mining.

EDITOR ENGINEERING AND MINING JOURNAL.

SIR: In the synopsis of Dr. Wyatt's *Phosphates of America* in your issue of November 14th, you quote him as saying that the average cost of Canadian apatite delivered f. o. b. Montreal was $14 per ton, and average price for all sold was $15 per ton, with an average of 75% tricalcic phosphate.

Now, as a large quantity of this same mineral is shipped from the Kingston district, I think these figures are considerably at variance with a knowledge of the facts. Quite a quantity of phosphate is mined here by the contract system by paying the laborers a price per ton for the dressed mineral laid on the surface, and as the work is usually done by three or four miners as partners, without plant or machinery, the natural deduction is that it is not by any means the cheapest method of production. The usual prices paid for mining the mineral this way is from $4 to $7 per ton, or, say, an average of $5.50, the miners making in this manner more money than by working for daily wages. To this $5.50 is to be added the freight rates, which vary according to location, from $1.50 to $3 per ton to Montreal or Cleveland, or an average of $2.25, making the actual cost in either city about $8 per ton. With capital, systematic mining with machinery, etc., this figure is somewhat reduced.

Again, as more attention is now being paid to cobbing and selecting the mineral, very little 75% rock is sold and as the major quantity is from 80% upward, 80% at least would be nearer the average.

There is a large quantity of low grade—that is mineral intermixed with lime carbonate, etc.—which is not purchased by the buyers—that would average over 50%, but as it is not marketable it has no influence on the market prices other than it adds to the cost of the marketable commodity, as in many cases it has to be removed and thrown into the dumps.

On the whole I think these figures will apply to the Buckingham as well as the Kingston district consequently I cannot conceive how Dr. Wyatt has obtained figures from which to draw the conclusion that there is only $1 per ton profit on the apatite mined in Canada. and such a statement coming from an authority like him does the country and industry a great injury as well as an injustice.

KINGSTON, ONT., November 18th. GEO. A. SPOTSWOOD, M. E.

[Our correspondent has apparently not yet read the book, in which Dr. Wyatt gives the data in full from which his deductions are made; it seems to us that all the points raised are fully answered by Dr. Wyatt, but we shall be glad to publish any official figures, as to dividends paid by Canadian apatite mines, or the prices paid for phosphate, carrying out our correspondents views. Dr. Wyatt quotes from the official records, collected by the Canadian Government. [ED. E. & M. J.]

Congressman H. F. Bartine on the Free Coinage Question.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The communication from H. F. Bartine, published in your issues of October 24th and 31st has been read with interest, and as Mr. Bartine in his "preliminary observations" makes some statements that demand reply, we take the liberty of giving you the facts as they exist, and your readers can make their own deductions.

Mr. Bartine says "it is my fortune to represent in the lower house of Congress, the same State so ably represented by Senators Jones and Stewart in the upper."

To those who are familiar with the politics of the State so "ably represented," the application of the name "Republican" or "Democratic" party means nothing. There are Democrats and there are Republicans in the State of Nevada, but the only "Party" existing there is the "Mill Ring Party," which is dominated absolutely by Senator John P. Jones and his associates. The heads and managers of both parties are the employés of the Mill Ring and dependent on that ring for the positions they occupy and the money they spend. The heads of the Democratic "Party" are, one the superintendent of two of the worst robbed mines on the Lode, and the other an attorney who is at almost all times doing work for the Mill Ring. The leading papers of the State, published at Virginia City, are supported and continued in existence by the "pap" fed them by the Mill Ring, and they dare not criticise its acts. The Federal appointments in the State are controlled by the Mill Ring. The Federal Judges are appointed by the influence of the Mill Ring. The local Judges are elected by the power of the Mill Ring.

With this knowledge of the power of this ring, it can be easily seen that Mr. H. F. Bartine, Congressman from the State of Nevada, owes his position to this same Mill Ring; no one could occupy that position unless he was a friend or tool of that ring.

Mr. Bartine says that "every man in the employ of John P. Jones or any other mine owner in Virginia City or Gold Hill, is paid $4 per day for eight hours' work. This is untrue, as the Jones people manage the Crown Point mine and others, and in that mine the men work 10 hours per day and not 8 hours. These same parties tried to introduce the 10-hour system elsewhere, but the "Miners' Union" stepped in and stopped them. The men at the mills controlled by the ring work 12 hours a day and the majority get $3 per day, a few only getting $4. Among the members of the Miners' Union on the Comstock, the Jones gang is known as "low-graders," deriving their name from their method of handling all ores that go through their mills. They are spoken of with contempt by numbers of the members of the Miners' Union, and when "the white slaves" dare to talk they tell the listener that the "low-graders" have killed Comstock mining.

Mr. Bartine says of the Comstock miner, "With the product of a month's labor he can pay his board at a first-class restaurant and have $94 left," but Mr. Bartine fails to give any proof, and you have already published facts which disprove it.

Senator John P. Jones for many years past has been the exponent and champion of the Free Coinage doctrine. He stands on record as owner in he Comstock Mill Company, the Nevada Mill Company, and is reputed o be a large owner in the Union Mill and Mining Company. These three

companies reduce the majority of the ore mentioned in this communication. The companies for whom this ore is reduced report in all instances heavy charges for discount on silver produced by them. (In the case of the Consolidated California & Virginia Mining Company this discount for its fiscal year is reported to be $289,611 97.) If silver at 129·29 per ounce is so good for the community at large, why has it not been good for the milling companies owned in part by Senator J. P. Jones? They make their contracts for milling ore in *gold coin*, and compel the mining companies that produce the bullion to sell their silver at a frightful loss and pay their milling bills in *gold coin*, and this notwithstanding the fact that these same milling companies are receiving $7 per ton for work that costs them only $2 per ton.

Is it consistent for so persistent and disinterested (?) an advocate of free coinage to refuse to take the article he strives to force on the American people?

Mr. Bartine says: "The most casual visit of any Eastern financier to the State of Nevada will very speedily bring him face to face with the fact that in their advocacy of the free coinage of silver, Senators Jones and Stewart are supported by their constituency, with a unanimity not to be found upon any question of smallest concern even in the smallest township of the United States east of the Missouri River."

If this be so, why does that same constituency insist upon the payment of all its dues in gold coin? Why do the transportation companies, the water companies, the wood and other supply companies insist upon and receive their payments in gold coin instead of taking the production of the mines without compelling those mines to make sacrifices in selling their silver to get gold. These advocates of free coinage say by their acts, "Silver is a good thing for the other fellow, but we want gold coin."

J. H. Tingman,
Secretary, Mining Stock Association.

San Francisco, Cal., Nov. 9th, 1891.

River Mining in California.

Editor Engineering and Mining Journal.

Sir: I write to correct several errors contained in an article under the above heading by Mr. S. S. Boynton, which was printed in your issue of September 5th.

Your correspondent accords to Major Frank McLaughlin the credit of originating the plan of turning the Feather River, by means of a bed rock canal, for the purpose of mining the gravels of the natural low water channel, through the old Cape and Union Cape (now Golden Feather Channel, Ltd.) ground, near Oroville, in this State. According to him also it would appear that the project was floated in London solely on Major McLaughlin's representations, save that the feasibility only of plans proposed by him was submitted for opinion to me. And, finally, the credit of construction design is accorded to Mr. W. G. Sanborn. This is all in error. The facts are as follows:

The feasibility of diversion of the Feather River at the point in question, and substantially as since executed, was examined by myself as State Engineer in 1880, as part of a possible irrigation project, to carry the waters out to the plains below. My official proposal and examination was the first heard of this diversion, so far as I know.

In 1882, the Hon. W. C. Hendricks took up the idea of this diversion to utilize it as now done for mining purposes, and I then personally re-examined the ground, and myself instrumentally reconnoitered the route since built upon, located the dam site, made provisional estimates and reported upon the project for him. The report, dated October 23d, 1882, was put in print. Hendricks was not able to consolidate or control the interests involved and raise the capital, so the matter dropped.

In 1890 Major McLaughlin having secured options on the properties desired, and knowing what had gone before in this connection, came to me to plan and report the scheme more definitely for him. This I did in person and completely as a preliminary operation. My report and plans, dated March 25th, 1890, were, at Major McLaughlin's request, addressed to his associates, Messrs. Harvey & Kelley, in London. On them, so far as works, engineering plans and probable cost was concerned, the scheme was floated and capital was there raised, and not on Major McLaughlin's plans or report, for he was the vendor of the property. My report was afterward indorsed over to the directors of the company which assumed the undertaking.

I refer you to the report of the chairman of this Gold Feather Channel, Limited, made at its first statutory meeting, and published in the *Mining World and Engineering Record* of August 23d, 1890.

After organization I was called on to make a close location survey and final plans for construction. This latter work was completely done by me, and to the satisfaction of Major McLaughlin, who had then been made manager for the company, as shown by the subjoined letter.

Mr. W. G. Sanborn was an assistant of mine on the last work done. He had no connection with or knowledge of it before. He was taken there by me. He did not design anything of the main work except matters of detail under my direction and following over ground previously traversed by me.

By reason of my own close engagement elsewhere, when the canal work was finished in June of this year my connection with the enterprise temporarily ceased. Mr. Sanborn, in the meantime, had been made assistant engineer, and at first was under my direction. Then he was made superintendent of construction and was under the direction of the business manager, Major McLaughlin.

Hence, the conception of this diversion work was originally mine; the project was floated on my engineering report; the location of canal and dam was made by me, and all the plans were mine and I supervised the construction in its intial stages until the canal was nearly done, when, for the time being, my services were no longer needed. I have had no control of the expenditures and don't know what they have been; or any connection with the operation of the property for mining, nor otherwise, except as above. The subjoined copies of letters are self-explanatory, and are made part hereof.

Wm. Ham. Hall.
Mem. Am. Soc. Civ. Eng'rs.

San Francisco, Cal., Nov. 24, 1891.

Golden Gate Alluvial Syndicate, Limited,
Orovillk, Cal., May 23d, 1891.

Wm. Ham. Hall, Esq., Ogden, Utah.

My Dear Hall: I wired and wrote you of success of "Schinden" (Golden Feather) to your S. F. office previous to hearing of your departure for the North. I again congratulate you on the success of the project as I know you do me.

Your magnificent work on "Schinden" (Golden Feather) report and maps elicited the following complimentary remarks from the usually placid John Bull. Mr. Harvey writes me on April 22d. "Mr. Hall's report, maps, etc., are simply splendid. We had not the slightest idea that such elaborate maps were being made. The map showing the river and canal alongside we are going to issue with the prospectuses and for that purpose are having it reduced to a handy scale. We can now understand the amount of work Mr. Hall had to go through and are surprised that he managed to execute it in the fine form he has, in so short a time. We have written him expressing our pleasure at his report and maps and thanking him for the thorough manner in which he has gone into the whole thing."

Well, success to you, but don't tie yourself up with any new business, for we will want you here and that soon as possible as I wired you to Tacoma.

With best wishes and kindest regards, I am. Sincerely yours,
(Signed) Frank McLaughlin.

Office Golden Feather Channel, Limited,
Oroville, Cal., May 15th, 1891.

Col. Wm. Ham. Hall, Consulting Engineer Golden Feather Channel, Limited, San Francisco, Cal.:

My Dear Colonel: Construction work upon our canal and walls, upon which you were engaged as consulting engineer and for which you made the working plans, will practically close for the season at the end of the present month. The attention of the company's force must now be turned to getting the claim ready for mining, and I am obliged to economize until it is seen what encouragement the river gravels will give us. Hence, and on account of your other engrossing engagements, our relations in this connection are now by mutual agreement to be temporarily severed.

In thus closing our relations on this work, I am pleased to bear witness that the Golden Feather Channel, Limited, canal, walls and diversion dam are of your planning, and that they have thus far been constructed to your designs and will, so far as I know, be finished in accordance therewith.

It also affords me satisfaction to state that myself and associates in London relied on your report in promoting the organization of the company and the placing of its stock, and that it met with the entire confidence of those contemplating the investment. Very truly yours, (Signed), Frank McLaughlin,
Manager Golden Feather Channel, Limited.

Office Golden Feather Channel, Ltd.,
Oroville, Cal., September 29th, 1891.

Col. Wm. Ham. Hall, Consulting Civil Engineer, San Francisco, Cal.

My Dear Colonel: In replying to your recent letter of retirement from the consulting engineership on the Golden Feather Channel, Ltd., canal, walls and diversion dam works, after acknowledging the correctness of the statement therein, I take the occasion to again testify to the value of your service in this connection.

We have now diverted the river through the canal, and with results altogether satisfactory in the matter of duty which your designs were to meet.

I freely release you from your former engagement with me to serve the company as consulting engineer to the end of its canal and dam construction, and accept your offer to do this service gratuitously, promising you all due credit as the architect of these works. Very truly yours,
(Signed) Frank McLaughlin,
Manager G. F. C., Ltd.

Aluminum for Flasks.—A correspondent in Germany writes us as follows: While in Ulenberg, Bavaria, a few weeks ago, I found that a local firm had already begun the manufacture of aluminum flasks for the Bavarian army. These flasks were apparently quite as strong and perfect as those of brass and were seemingly manufactured by spinning. I was informed that the Bavarian government had ordered 2,000 for use in the army as a trial, and the manufacture promises to become a large one in Ulenberg. I did not learn whence the raw materials were obtained. This information I got from a retail dealer. These facts seem worth recording, because this is the first instance where I have found aluminum for sale at moderate rates in the form of utensils used in daily life.

The Peat Industry of Sweden and Germany.—Peat is forcing itself more and more upon the attention of the industrial world as a valuable raw material, says a correspondent of *Industries*, writing from Sweden. At Malmö, a factory for the manufacture of peat poudrette is about to be erected, and one of the leading features of the new installation will be the adoption of the Levander separator. The same separator has for some time been in use at Skragge, near Gothenburg, where sewage and the residue of fish are being handled so as to leave a valuable manure. The principle in this new process is a rapid drying of the raw material by means of artificial heat, while at the same time being disinfected by the addition of creosote. Dr. Leo Pribyl states in the *Handels Museum*, that peat is being utilized in Germany as a source of bog-head naphtha, tar, solar oil, paraffin, acetic acid, and gas, and that the peat bogs of North Germany and Sweden are now being worked with a view to obtaining the elastic fiber, which, when free from dust, is used for weaving into carpets and other textile fabrics. Good peat also furnishes a peat cellulose, which obtains a good price from paper manufacturers, and when dried is valuable as a packing material as a substitute for straw litter, and the dust is especially adapted for preserving perishable articles. Meat and fish have been sent from Trieste to Copenhagen packed in this material, and have reached their destination in perfect condition. It is suggested that this might become an important industry in Ireland.

Wanted: Better Roads.—If the roadmaking experiences of modern Europe teach us in America one lesson more than another, it is that our common roads should be taken as much as possible out of the hands of the merely local authorities and administered by either the national or the state governments after some plan in accordance with scientific knowledge and the needs of the people who use the roads, says John Gilmer Speed in *Lippincott's Magazine* for October. As all the people use the common roads either directly or indirectly, it is not unfair that what is needed to be done in the matter of road improvement should be paid for by a general tax. All would benefit, therefore all should pay. The present condition of American roads is disgracefully bad, and entails a tax upon the people much heavier than that of the tariff of which we hear so much from the politicians. It is an indirect tax, however, and therefore many are unaware of it. To lift this tax all the people must concern themselves. The country people will not be active in the matter, for they fear that they would have to bear all the cost of any improvements. They are not to be blamed for this, for they could not afford to do at once, or indeed in any thorough way, what is needed to be done. Nor could they take charge of the improvements; for, even if they had the inclination and the means, they lack the requisite engineering knowledge. It is quite as difficult to locate a good common road as it is to locate a railway; and no one would think of inviting a country storekeeper, a village blacksmith, or a backwoods axeman to lay out a railroad between Philadelphia and New York; but to such as these are our common roads and country highways now confided. The roadmakers are not to be blamed, for they do the best they know how; it is the system which is at fault, and until that be remedied our country folk will "wallow in the mire of their ways, pay excessive tolls, endure, in a word, a grinding taxation, generation after generation, without appreciating the burden which rests upon them."

THE DISCOVERY OF THE COMSTOCK LODE.*

Written for the Engineering and Mining Journal by Dan De Quille.

In 1850, Western Utah, now the State of Nevada, was almost uninhabited by whites. The only persons in the country who could be spoken of as settlers were a few Mormon families living in the upper part of Carson Valley, at and about the town of Genoa, the present county seat of Douglas County, then known as "Mormon Station," with four or five other Mormon families in Washoe Valley, in a little hamlet near Washoe Lake, called Franktown.

Fourteen miles north of Mormon Station, in Eagle Valley, where Carson City, the capital of the State, now stands, was Eagle Ranch; and 12 miles northeasterly from Eagle Ranch was the trading station of James McMarlin, situated on the Carson River at the mouth of Gold Cañon, where now stands the town of Dayton.

East of McMarlin's, a distance of 52 miles, on the Carson River, where the emigrant trains first struck that stream after leaving the sink of the Humboldt and crossing the great Humboldt desert was Ragtown, the outpost of civilization in the country at that time. Ragtown was merely a trading station kept by one Asa Kenyon. The place derived its name from its ragged and miserable appearance, there being about the station a lot of huts of the Piute Indians, constructed of brush, pieces of old wagon covers, ragged remnants of tents, old quilts and Indian mats.

All the remainder of the country was an uninhabited waste over which at times roved the Piute Indians, who made their headquarters about Pyramid Lake, the "sinks" of the Humboldt and Carson rivers and Walker Lake.

Although it was a sterile and forbidding looking region to persons fresh from the older States, where seasonable showers clothe all the land with verdure, it would now instantly be recognized by men of the Pacific coast States as a country rich in the precious metals. Evidences of the existence of these metals were to be seen in almost every hill and every mountain range—could be seen miles away by those able to read the language of the rocks.

But while those composing the grand army of emigrants were sufficiently alert to quickly discover the salt, soda and other mineral products of the valleys and deserts, they did not extend their explorations to the bordering mountains, though daily "float" quartz was being ground beneath the wheels of their wagons.

Though the emigrants of 1849 were ignorant of all pertaining to the business of gold-hunting, some of those who crossed the plains next season had obtained some notion of the method of washing gravel in a pan—the trick of panning. Thus it happened that gold (not silver) was first discovered in this region. Some Mormons encamped on the Carson River at McMarlin's Station, awaiting the disappearance of the snow from the summit of the Sierras in order to continue their journey to California, have the credit of finding the first gold in what is now the State of Nevada.

While waiting on the river, some of the men of the Mormon train one day took a common tin bread or milk pan and going up into the big cañon that put into the stream near their camp tried their hand at prospecting. In the first pan of gravel washed they found a considerable number of particles of gold. This encouraged them to search for bars and other likely spots and set regularly to work. They were able to make from $5 to $8 a day, but as soon as the mountains were passable they resumed their journey to California.

Other emigrants following "mined" for a few days in the cañon while resting their teams preparatory to crossing the mountains, but soon they, too, pushed on to California to "dig gold by the pound." McMarlin was anxious to have men stop and mine near his station, therefore he pointed out the cañon to all incoming emigrants and said: "Right there are as good gold diggings as you will find in California. This country is undoubtedly rich in gold—better halt here, establish homes and prospect the country." Many tried the diggings, found they could make good wages, even with pans, but having started for California they determined to pass on to that ever-blooming land—they could not endure the dreary surroundings of Gold Cañon, as was (and is still) called the big ravine in which the diggings were situated. One or two families, however, halted and worked in the cañon nearly all summer—until the water dried up—when they also went to California.

The reports of the incoming emigrants on their arrival in Placerville of "half-ounce diggings" on the Carson River induced some gold diggers of experience to cross the mountains and prospect Gold Cañon. They found that during the winter and spring months they could make from half an ounce to an ounce a day while the water lasted, the gold being worth only $12 an ounce, however, owing to the large amount of silver it contained. These men thought of nothing but placer gold, and there was no permanent population on the cañon until the winter of 1852-53, when about 200 men were at work in the diggings. As they worked their way up the cañon they established a new camp, which was called Johntown. This camp was about four miles above the mouth of the cañon. Nothing more than an old stone chimney now remains to mark the site of what then was the "mining center" of all the region between the Sierra Nevada range and the Rocky Mountains. In the camp were about a dozen buildings, the majority mere shanties, most of the miners preferring to sleep out in the open air during the summer.

From this "mining metropolis of the Great Basin," prospectors presently began to sally forth as the bars and gravel banks along the cañon began to fail. In 1857 gold was found in what was called Six-mile Cañon. It was the next big cañon north of Gold Cañon. It headed on the north side of Mount Davidson (Sunrise Peak), while Gold Cañon headed on the south side of the big mountain, the heads of the two cañons being only a mile apart. The two cañons came together like the sides of the letter "A," with Mount Davidson at the apex.

The gold discovered in Six-mile Cañon was found at a point about a mile below the spot where the silver ore was first brought to light. Thus on both cañons the gold diggers were nearing the Comstock lode, the croppings of which were plainly to be seen running north and south across the eastern face of Mount Davidson.

In January, 1859, James Finney, known in the mines as "Old Virginia," John Bishop, H. T. P. Comstock, and one or two others of Johntown, began prospecting at the head of Gold Cañon, where the town of Gold Hill now stands. They happened to start in immediately upon the decomposed croppings of what is now known as the Comstock lode. Scraping up the loose top dirt with their hands they found in it from ten to fifteen cents to the pan. All the party then located claims for placer diggings, blissfully ignorant that they were staking off their "ground" on the surface of an immense vein of decomposed quartz. As soon as they began regular work they made $5 a day to the man, and on attaining a depth of two or three feet made $10, $15 and even as high as $25 a day to the man.

The place was named Gold Hill, because of a little hill of rich decomposed material near the center of the digging, and soon all Johntown moved up to the new camp. The people brought from Johntown all the houses worth moving, and, putting up some new ones, of logs, were soon

THE FIRST HOUSE IN NEVADA.†

† From a photograph by J. H. Crockwell, Salt Lake City. This house, which was located at Genoa, was built by Col. Ruse in 1850, and was known as the old Mormon Station. Originally it had no floor, wagon bottoms and sides being the only timber that the early emigrants had. The shingles and front boards, shown in the photograph, were put on the house in 1870.

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firmly established. They were actually settled upon, and working, the southern portion of the Comstock lode without a thought of being engaged upon anything of greater depth and value than the placer ground they had been delving in at points along down the lower part of the cañon.

Underneath the town of Gold Hill, where these men located their placer claims, are the Crown Point, Belcher, Yellow Jacket, Kentuck, and other mines that have yielded millions upon millions of gold and silver bullion. In this part of the Comstock lode the silver ore lay about 300 ft. below the surface. The Comstock lode had been discovered, but not the silver ore it contained.

Among the gold-hunters who came up from Johntown to the new camp of Gold Hill were Peter O'Reiley and Patrick McLaughlin, the two men destined to turn up to the light of day the first silver ore. Their diggings at Johntown had ceased to pay. At Gold Hill they found all the paying ground claimed, and concluded to cross over the "divide" to Six-mile Cañon, to which place had returned some of the men who had worked there in 1857.

Here, too, the two men found parties working all the ground that would pay wages. Luck seemed to be against them wherever they turned. At last a friend spoke to them of a spring near the head of the ravine, and told them they could have the use of the boxes of a small V-flume which he had left there the year before, if they found any place to which they wished to convey water for washing.

As there seemed to be nothing else for them to do, O'Reiley and McLaughlin went up to the head of the cañon—to where it was a mere shallow ravine or sag. They ascended to a point above where any signs of work were to be seen. On the slope of the mountain they obtained a small "prospect" in gold. They moved the flume boxes and conducted the water of the spring to the spot. By hard work at washing the surface dirt in their rockers, they were able to make only from $1.50 to $2 a day each. They had not sufficient water to sluice the material they were working; indeed, hardly enough for use in their rockers.

The two men continued to work with their rockers in the loose soil of the mountain slope until in June, 1859, poor as was the pay. As an experiment they began a little cut or trench and advanced it up the slope of the mountain, thinking that with depth the gold would increase. But instead of increasing, the amount of gold decreased. Luck seemed against them at every move they made. They began to talk of abandoning their diggings and going to East Walker River where, at a place called Dogtown, placer mines had been found. However, finding that all the gold was in the surface soil, they concluded to work a few days longer.

Their supply of water was so small that they found it hardly sufficient for use in their rockers. In order to economize this supply and have it handy while washing the surface soil, they went a few feet above their little cut and dug a pit to serve as a reservoir. In digging this water hole they went a little deeper than they had in their trench and at a depth of about four feet came into the rich decomposed black sulphuret ore of what was soon to be heard of all over the civilized world as the great Ophir silver mine, of the Comstock lode.

We have seen how the two men puzzled themselves with the "queer black stuff" they thus brought to light, and their joy on discovering that it was rich in gold. After they had seen the golden result of washing the first bucket of the new material, the two men went to work with a will. When a few buckets had been washed they found the whole bottom of their rockers covered with gold, several ounces of the metal. The gold, they then observed, was very light in color; so light that they began to fear it was some new and base metal. Also the great amount of it they were obtaining began to frighten them and strengthen them in the belief that what they had found was not real gold. Nevertheless they went on with the work of digging and washing it. The fact was that the gold contained so much silver that it was worth only about $11 an ounce. A small quantity of silver is capable of whitening a large amount of gold.

The gold was in small grains and flakes and was somewhat light in weight as well as in color. Before night the two men had washed out such a quantity of the gold that from the bulk they seemed to have several pounds of it. I do not know the value of this first day's work, but not long after when an open cut had been extended some distance into the decomposed mass of the vein they were taking out the gold at the rate of $1,000 a day with rockers. This came out of the loose material. One man, pounding in a hand mortar the lumps of black sulphuret thrown off the screens of the rockers, was enabled to take out gold at the rate of $100 a day.

There being no washed (rounded) gravel in the material they were working, O'Reilly and McLaughlin presently arrived at the conclusion that they were delving into the top of a decomposed quartz vein. They therefore wrote out and posted up a notice claiming 300 ft. each on the vein and 300 ft. additional for making the discovery, as the laws of the mining district gave them the right to do. They were about to quit work for the day when along came Henry Thomas Paige Comstock—as the man was fond of giving his name. Comstock was then living at Gold Hill, and had come up on the mountain side to catch a pony.

Comstock caught sight of the gold the men had washed out and was off his pony in a moment. As soon as he had examined the gold and the streak of black heavy material from which it was extracted he suspected that a great discovery of some kind had been made. He at once told the men that they were working on ground that belonged to him; that he had located a ranch covering the side of the mountain and taking in the water of the spring; in short be laid, claim to everything in sight. At last, however—when he had succeeded in sufficiently alarming the two men—Comstock said he would make no trouble if the discoverers of the mine would post up a new notice giving himself and his friend, Emmanuel Penrod, a claim each on the lode. This being agreed to, Comstock next demanded that an additional 100 ft. of ground be segregated to himself and Penrod for the right to the water of the spring, and that this additional block of 100 ft. should be in the middle of the claim taken up by the party—immediately south of the discovery claim. This also was granted him.

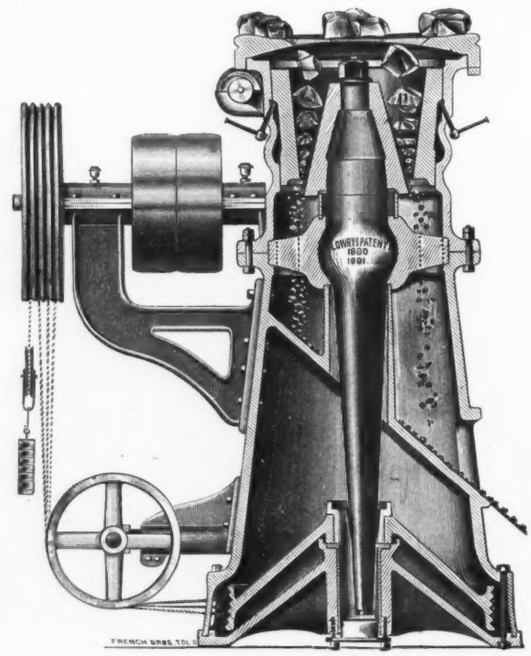
As soon as he had thus worked himself into the new "find," Comstock advanced himself to the front as the head man of the new company. He was always on hand at the mine to do all the talking to visitors, and so assumed charge of everything that the discoverers of the lode were quite thrown into the background and overshadowed. Though the mine had been named the Ophir, owing to this "predominance" of Comstock it was generally spoken of as "Comstock's mine," and the vein as "Comstock's lode." Thus it happened that the name of Comstock was at last given to the whole lode as far as traceable north and south. It is because of his name being thus given to the whole vein that many persons to this day suppose Comstock to have been its discoverer, whereas the men to whom that credit is due are Peter O'Reiley and Patrick McLaughlin.

Comstock no more suspected that the "black stuff" was silver, or anything else of value, than did its discoverers. Indeed it was not until the washing of it for gold alone had proceeded for some weeks (about the 1st of July) that any one knew that the peculiar material was almost pure silver; then the first assay of it was made in Grass Valley, California.

THE LOWRY ROCK AND ORE BREAKER.

The Lowry rock and ore breaker is a new gyratory crushing machine, which is being introduced by the National Machinery Company, of Tiffin, O., the well known manufacturer of bolt and nut machinery. The construction of this crusher will be readily understood from the accompanying illustration, which shows it in section, with a removable revolving top for fine crushing, containing two or more holes to regulate and spread the stone around the breaker head. The stone is thrown into a hopper (not shown), and is discharged as fast as broken, avoiding any danger of clogging.

The vertical shaft is fulcrumed below the crusher head instead of above it as in most machines of this class. Consequently there is less motion at the bottom of the jaw and the product is more even than that of any of the jaw crushers in which the jaw is pivoted at the top. The chilled-iron



crusher head, or cone, is smaller in the Lowry breaker, in proportion to other parts of the machine, than in other crushers of this class. The chilled-iron ring, or liner, which constitutes the other crushing face, is cast in one solid piece, having a perfect and solid turned bearing and supporting backing behind it.

The machine is adjusted for crushing to various sizes by the screws shown at the side of the crushing mortar, by which the liner can be raised or lowered. Thus there is no necessity of lifting the vertical shaft (carrying the crusher head), the bottom of which always remains in the oil chamber of the eccentric, shown at the base of the machine. The vertical shaft is driven by ropes, with sufficient laps around the pulleys and ample provision for adjustment in the tension pulley.

As one of the chief advantages of this machine, the manufacturers claim that the crusher-head strikes downward, and has a tendency to draw in the material to be crushed, and not upward with a tendency to throw it out, as it would if the vertical shaft were fulcrumed at the top. These breakers are made in nine sizes, having a capacity of from 5 tons to 250 tons per hour.

A New Blacking Fluid for Iron and Steel.—A useful fluid for coloring iron and steel goods a dead black may be prepared, says the *Iron and Coal Trades Review*, in the following manner: Bismuth chloride, 1 part; mercury bichloride, 2 part; copper chloride, 1 part; hydrochloric acid, 6 parts; alcohol, 5 parts; water, 50 parts. Before applying the fluid the article to be blacked or bronzed should be clean and free from grease. It may be applied with a brush or the object may be dipped into it. Let the liquid dry on the metal, and then place the latter in boiling water, and maintain the temperature for half an hour. If the color is then not as dark as desired, repeat the operation. After getting the desired color, the latter is fixed and much improved by placing for a few minutes in a bath of boiling oil, or by coating the surface with oil and heating the object until the oil is driven off.

PROMINENT MEN IN THE MINING INDUSTRY.

Philip Argall.

Few men engaged in the mining industry have had such varied experience in the practice of the profession of mining engineering and metallurgy as Mr. Philip Argall, of Denver, Colo,, whose portrait and a brief sketch of whose life we present this week. Although still a young man his past professional work includes mining and ore dressing in Ireland, mining, ore dressing and metallurgical work in Swansea, gold mining in New Zealand, silver mining in Mexico, silver-lead mining in France, and finally gold and silver mining in Colorado. Having thus resided in the four corners of the globe, which he has almost circumnavigated in the course of his travels, the successes which he has scored everywhere may be truly said to have given him a world-wide reputation.

Mr. Argall was born near Belfast, Ireland, in 1854, his father being descended from an old West of England mining family. He was educated in Ireland and gathered his first mining experience there, beginning work as a mere lad in the dressing works of the famous Cronebane mines at Ovoca. Subsequently he went underground as a miner and worked himself up through the various grades, studying surveying, chemistry, mineralogy, and metallurgy in the meanwhile, until in December, 1875, he was promoted to the position of agent in charge of the mines. During the three years in which he held this position he displayed the capability which has been the foundation of his success in the profession. In connection with Mr. G. Henry Kinahan, district surveyor of H. M. Geological Survey, he prepared geological plans and sections of the Ovoca mining district and a descriptive paper entitled "The Geological and Mineralogical Districts of Ovoca," which was awarded the prize at the Royal Cornwall Polytechnic Society's Exhibition in 1878. This work was an excellent piece of geological investigation and study and has been quoted extensively in Phillips' *Treatise on Ore Deposits*. About the same time he prepared a paper on "Ancient and Recent Mining Operations in the Eastern Ovoca District," which was read before the Royal Dublin Society, and was printed in its proceedings for 1879.

PHILIP ARGALL.

Mr. Argall severed his connection with the Cronebane mines in February, 1879, in order to assume the management of the Stannic Company's works at Swansea, Wales, which had been erected for the application of Mr. Edward A. Parnell's patents for the extraction of tin from tin plate scrap, etc., which business was carried out at these works in connection with tin and lead smelting. In performing the duties of this position he showed the same efficiency, executive ability and capacity for carrying out original research which had won him success at Ovoca, and upon closing his connection with this company, in June, 1880, he was warmly commended by Mr. Parnell for the intelligence and ingenuity which he had displayed in conducting and improving the process.

The close of 1880 found Mr. Argall managing the large business of the Glenariff Iron Ore and Harbor Company, in the county of Antrim, Ireland, the property of the company consisting of extensive mines of aluminous iron ore. The results of his geological studies at this place he embodied in a paper on the "Tertiary Iron Ore Measures, Glenariff Valley, County of Antrim," which was read before the Royal Dublin Society in 1881. Early in 1881 Mr. Argall resigned his position at Glenariff to become the manager of the mines of the Duchy Mining Company, in Cornwall, which were profitably conducted by him for over two years, the success of the company being largely due to the concentrating mill erected by Mr. Argall from his own designs to treat the low grade blende ores of the mines. Among the machinery designed by him for this mill was the Argall jig, which is a modification of the ordinary Hartz jig, the principal difference being that the piston is placed between two hutches, in free communication with the sieves on each side. This jig and other machinery used in the Duchy mill were described in a paper entitled "Continuous Jigging Machiner for Automatic Ore Dressing," read by Mr. Argall before the Mining Institute of Cornwall, April 24th, 1883. In the previous year Mr. Argall had prepared in conjunction with Gerrard A. Kinahan Esq., a paper "On the Recovery of Copper from its Solution in Mine Drainage, with Remarks on the Hydraulic Treatment of Copper Ores," which was printed in the scientific proceedings of the Royal Dublin Society for 1882.

After two and a half years connection with the Duchy Mining Company, Mr. Argall resigned in order to accept the management of the Barking Metal Works (antimony smelting and refining) in London, but remained there but a short time, resigning in the middle of 1884 in order to take charge of the property of the Kapanga Gold Mining Company, of New Zealand, Limited. He passed a year in New Zealand engaged in this manner, and after the conclusion of this engagement spent a short time in traveling through various parts of Australia, examining mines and studying the mining industry of the colonies.

Los Bronces, Sonora, Mexico, was his next field of operations; there he managed a group of silver mines for the Silver Queen United, Limited. He opened out the mines and superintended the erection of a large concentrating mill and hoisting works, but the failure of the shareholders to subscribe the further amount of capital required to enable him to continue the exploration of the mines obliged him to resign the superintendency, whereupon he returned to England, and immediately accepted an engagement to erect large dressing works for the treatment of the aluminous iron ores of the Mount Cashel mines in County Antrim, Ireland.

From Ireland Mr. Argall went to the district of Aveyron, France, as consulting engineer for the *Société Anonyme des Plombs Argentifères D'Asprières*, and resigned that position to accept the management of the New La Plata Mining and Smelting Company, Limited, of Leadville, Colo., subsequently reconstructed as the La Plata Mines, Limited, which position he now holds.

The La Plata Mining and Smelting Company, which had been quite successful in the early days of Leadville, had practically exhausted its mines and closed down its smelting works, after an unsuccessful campaign, just before Mr. Argall's arrival in Leadville. Realizing that the smelting works, which were old and out of repair, could not be run successfully in competition with the more modern and better arranged plants at Leadville, Denver and Pueblo, he made no attempt to blow in the furnaces again, but confined his attention to directing exploration and development work in the mines, which were being operated mainly under the tribute system. The result of his cautious and conservative policy and intelligent prospecting work has been that the mines are again yielding a profit, and the company promises soon to pay a dividend for the first time in many years.

About two years ago Mr. Argall removed from Leadville to Denver, his increasing practice as a consulting mining engineer making it necessary

for him to open an office in a central location. He has also determined to remain permanently in the United States, and recently became a citizen. Within the last year he has undertaken extensive mining operations in the San Juan district of Colorado, having organized the Red Mountain Silver Mines, Limited, the Mine Owners' Trust, Limited, and the Colorado Boy Silver Mines, Limited, all of which companies are now engaged in the exploration of promising prospects in the rich Red Mountain silver belt. Mr. Argall holds the position of manager of all these companies, and under his intelligent direction several of the mines bid fair to become paying properties.

Personally, Mr. Argall is modest and not inclined to say anything concerning the many achievements of which he has reason to be proud. His friends and the profession at large, however, appreciate his merits and welcomed his entrance into the ranks of American mining engineers. He is a close student of the literature of the profession and an occasional contributor to the ENGINEERING AND MINING JOURNAL and other technical publications.

A METHOD OF STANDARDIZING IODINE SOLUTION FOR THE DETERMINATION OF SULPHUR IN STEEL AND PIG IRON.*

By J. M. Wilson.

I desire to call attention to a method of standardizing iodine solution, for use in titrating sulphur in iron and steel, which has been in use in the laboratories of some of the iron works of the Ohio Valley for the past four years, and which, I believe, I was the first to use, in the laboratory of the Laughlin & Junction Steel Company, at Mingo Junction, O.

Finding the hyposulphite method would occasionally fail and frequently gave non-concordant results, on doubling quantities, I cast about for a substitute, and at length settled on a steel the sulphur contents of which had been very carefully determined by *all* the known evolution methods as a standard.

By using this standard steel I standardized my iodine solution by the same process that I used to determine the unknown percentage of sulphur in the samples of pig metal and steel submitted for analysis, avoiding the objections raised by certain chemists, that the hydrocarbons evolved with the hydrogen sulphide interfered with the titration by iodine when KOH was used as an absorbent; for the iodine solution, being standardized under conditions of actual working, it is to be presumed that, inasmuch as all the C in our standard steel is combined, there will be as much hydrocarbon evolved therefrom as from any sample we may have submitted to us for determination.

As to accuracy, there can be no question on that score, the only essential being that we make sure of complete solution of the metal under treatment by taking plenty of time to *complete the solution* of the *difficulty soluble sulphides, etc.*, which invariably accompany high sulphur irons, and making sure of absorbing *all* the evolved H_2S.

It is sufficiently rapid to suit the most fastidiou, as it requires no more time than is requi red to make the sulphur determination in the ordinary routine of laboratory work.

Gold-colored Silver.—At a recent meeting of the Paris *Académie des Sciences*, says *Iron*, the permanent secretary, Mons. Berthelot, exhibited some specimens of silver bearing an exact resemblance to gold. They had been forwarded to the *Académie* from America by Mons. Carrelly, who describes his methods, and adds that the novel result obtained can easily be nullified. Heat applied to the yellow metal, or even the simple vibration of a hammer blow, suffices to reimpart to it all the ordinary characteristics of silver. By a certain application of light the experimenter has succeeded in producing a variety of silver of purple color which is capable of communicating the yellow tint of gold to the ordinary white metal. As Mons. Berthelot remarks, it will be better before proclaiming the discovery of an allotropic state of silver having the appearance of gold, to note that the yellow metal is not pure. According to the analyses received from America, it contains about 3% of extraneous substances, considered by the experimenter to be iron and citric acid.

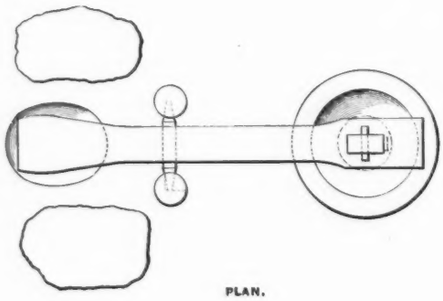
*From *Journal of Analytical and Applied Chemistry*, August, 1891.

A CHINESE SYSTEM OF GOLD MILLING.*

By Henry Louis, A. R. S. M., F. I. C., F. G. S.

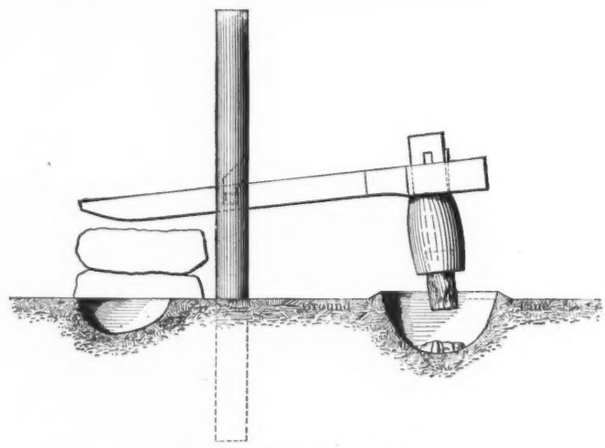
The object of the present paper is to describe a primitive method of gold extraction practiced by a small colony of Chinese in the district of Tomoh, one of the Siamese-Malayan States. This district has been worked for gold about 150 years, but has been only twice or thrice visited by Europeans, who are looked upon with a good deal of jealousy by the miners. Gold was first discovered by Malays in the sands or banks of the river Teluban, and they perhaps worked it to some small extent. The Malays are, however, constitutionally averse to continuous work in any shape, and before long Chinese immigrants, steady and inured to labor, came into the country and "rushed" these alluvial gold fields. The Malays every now and then killed off these immigrants, partly for the pleasure of the deed and partly to gain possession of the gold thay had washed out; but with characteristic perseverance the Chinese returned again and again in ever increasing numbers, and have now a firm footing in the country, the Chinese population of the Tomoh district being at present over 1,000.

The alluvials having been exhausted, attention was turned to the reef gold, which they began to attack about 70 years ago. The method of mining was then, and is now, the following: A small water furrow is first brought in at the highest possible level on a suitable hillside. The principal tool used by these Chinese miners is a heavy long wooden crowbar, shod with a long strongly made chisel-pointed iron socket. With the help of this and of the stream of water, which rarely exceeds 50 cu. ft. per minute, the surface soil and weathered country rock are loosened and sluiced away. No trouble is taken to save any of the gold washed down, except in one or two instances where rude riffles have been inserted in the tail race; the sluice is, however, carefully searched for bits of quartz showing visible gold, which are picked out and put on one side. The surface of the shales is thus stripped, and any veins of gold that may be laid bare are then worked, the principal mining tool being a rough kind of pick: the use of explosives, of even or wedges, is quite unknown. Neither shovels nor barrows are used; their places are taken by broad hoes and baskets, a pair of the latter, swung at each end of a stick and holding at least 70 lbs., being easily carried up steep grades by a Chinese miner. The tunnels, small and irregular, usually incline steeply upward; they are rudely timbered, and, as timber decays rapidly in this climate, these workings cannot penetrate far into the hills, but soon have to be abandoned, and the whole series of operations has to be recommenced.



PLAN.

Fig. 1.



ELEVATION PARTLY IN SECTION

Fig. 2.

A CHINESE SYSTEM OF GOLD MILLING—FOOT-POWER QUARTZ-CRUSHING MILL, TOMOH.

Scale 1 inch = 2 feet.

A party of 27 miners, who owned and worked a rich hillside, considered themselves to be doing well when their entire day's output (they do not work night shifts as a rule) was a little over half a ton of quartz. The quartz, as extracted from the reef, is cobbed down with hammers to about pass a 1¼-in. ring, and is then carefully hand picked, all stone showing visible gold, sulphurets or any other favorable indications being sent to the mill and the rest being thrown away. From one-eighth to one-half is thus rejected, this refuse rock carrying from 3 dwts. to 10 dwts. of free milling gold to the ton.

At first the mode of crushing adopted by the Chinese consisted in heating the rock red hot, quenching it in water and then pounding it down and rubbing it between two stones. About 35 years ago a tilt hammer, made entirely without iron and having a stone head, was introduced and is still much used by individual miners. About 12 years ago a battery of from three to six of these hammers, worked by a water-wheel, was first employed; it is said that this pattern was copied from a mill largely used in China for crushing the materials used for making "joss sticks." Such water mills are usually the property of a party of miners working together.

The foot mill shown in Figs. 1 and 2 is of the usual type, from which there are but few important departures. The entire falling weight is about 45 lbs., and the length of drop about 20 in.; as a rule, these mills are worked at 15 to 20 blows per minute.

The mill shown is built entirely without iron; the stone that forms the

*From a paper read before the American Society of Mining Engineers, Glen Summit meeting, October, 1891.

base of the mortar is a piece of hard quartzite or of barren reef-quartz, the same material being used for the hammer head, which is firmly held in its socket by wooden wedges, the socket being kept from splitting by a stout hoop of rattan twisted round it. Occasionally iron hoops are used, and some mills have iron spindles for the hammer to work on.

The Chinese usually work these mills for about eight hours per day. A shovelful of quartz is first thrown into the mortar, and the mill is then worked by the foot of the miner, who stands on one or other of the stones shown in the drawings, grasping the uprights or else a crossbar that i sometimes fastened across them.

When the quartz is supposed to be crushed sufficiently fine, the hammer-head is propped up, and the crushed stone is scraped out and sifted through a circular sieve 15 in. to 20 in. in diameter, and about 1½ in. deep. The sieve itself is made of thin strips of rattan about 0 01 in. in width. There are from 36 to 40 holes per square inch, so that the width of mesh varies between 0·04 and 0·06 in. A man can crush in a working day, with one of these mills, from 70 lbs. to 140 lbs. of stone, according to its hardness.

The number of heads in a power-mill varies between 3 and 6, depending principally on the quantity of water available. As the district is well watered, the large majority are 6-stamp mills. Fig. 3 shows the usual type of the latter mills, from which pattern there is practically no departure. As will be noticed, the construction of the water-wheel is extremely crude—the water, which is sometimes brought down very steep hills from considerable heights in small, steeply-inclined ditches, strikes the flat buckets with considerable velocity, so that the wheel is partly an impact and partly a pressure wheel; the buckets are never more than half-filled at the best, and the wheel is sometimes allowed to wade in tail-water to the full depth of the shrouding. Much power is accordingly wasted, the amount of water consumed in driving one of these mills being from 80 to 100 cu. ft. per minute. The average number of drops of each head varies between 28 and 32 per minute; the length of the drop is about 2 ft., and the effective falling weight of the head is about 70 lbs. Thus only about one-third of the thoretical power of the machine is utilized, but of course much of this loss of energy is due to the friction of the whole machine, notably between the straight cam and the tail-piece of the hammer. There are usually three men per shift working one of these mills, two being engaged in looking after and feeding the machine, while the third sifts the pounded stone as already described, throwing back under one of the hammer-heads whatever will not pass the sieve.

A stone hammer-head lasts from a week to a month, according to its quality. They are made, as in the foot-mills, from boulders of quartz rock, and it is mostly one man's business to search for these boulders in the bed of the stream, and, when found, to dress them into shape.

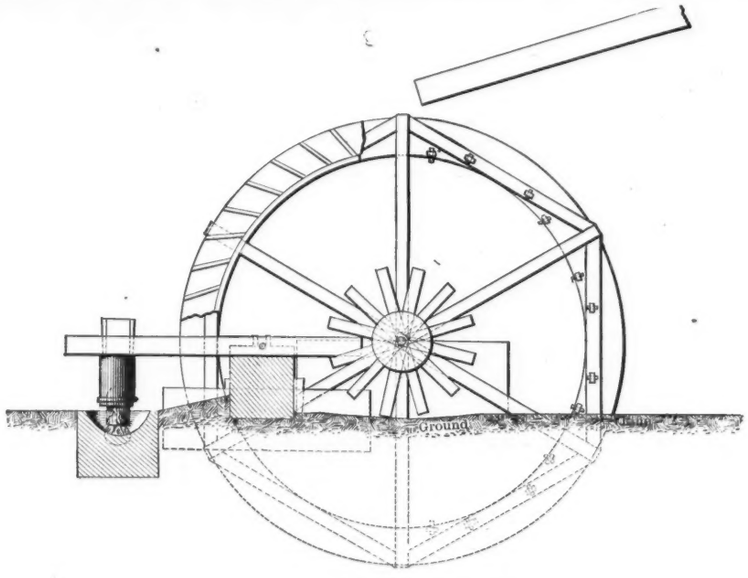
The crushing capacity of one of these mills varies from 850 lbs. to 1,400 lbs. per 24 hours, according to the hardness of the rock. It is to be specially noted that the crushing is performed quite dry.

After the mill has been running for a longer or shorter period, according to circumstances, a clean-up takes place. The crushed ore is carried out in large wooden pails to a Chinaman, who washes it, squatting down by the side of a square pit through which a small stream of clear water is kept running. The implement used for washing is a flat, somewhat conical wooden dish, cut from the spurs of certain hardwood trees, and fashioned with much care. It is known as the *dulang* and much resembles the Spanish-American *batea*, except that the section of the former is that of a very obtuse rounded cone, while the section of the latter is approximately that of a sphere.

A section of a typical *dulang* is shown in Fig. 4. Much importance is attached to the correct shape of the conical point, as it is in this that the precious metal is gathered together. The *dulang* is filled with from 10 to 15 lbs. of crushed stone, according to its size, and this is washed by a curious circular, combined with a slight undulatory motion, by which the particles of light, barren quartz are swept over the edge of the *dulang*, which is held just dipping below the surface of the water in the pit, while the heavier particles are collected in the rounded apex of the cone. When nearly cleaned, the gold and concentrates are transferred to a smaller, very carefully made and polished *dulang*, about 1 ft. in diameter, in which the quartz is washed off as thoroughly as possible, and the gold, by a skillful jerk, is thrown clear from the sulphurets, and finally collected in a small brass dish. The sulphurets still retain much coarse gold, to which they cling obstinately. They are ground as fine as possible on a stone and rewashed several times, a good deal of the gold being thus separated and added to that previously obtained. Even then the sulphurets still carry much gold, the larger portion of which is free. They are stored away in jars while wet and allowed to rust, and after a time they are sometimes recrushed and rewashed; very often they are merely allowed to accumulate and are not treated further.

The cleaned gold is dried and melted over a small forge provided with a box-shaped wooden blower of the usual Chinese type. The fuel is charcoal. Tiny, conical crucibles, capable of holding about a couple of ounces of gold, are used; the gold dust is melted in these with borax and niter as fluxes; the slag is lifted off the surface of the gold when the latter is supposed to be clean, by means of an iron rod, and the gold is then granulated by pouring into water. If it is not considered to be sufficiently soft and pure it is remelted, and the process is repeated until the gold is quite soft. The principal impurities removed seem to be sulphur, arsenic, a little copper, and perhaps traces of lead. Both the granulated gold and the crude gold dust, as also gold got from river washing, are used as currency in this district, coined money being scarcely ever seen here, and then only in the form of the old Spanish dollar.

In a partial wash-up at one of these mills during my stay in the district the following results, considered to be exceptionally good, were obtained, the quantity washed being as nearly as possible 2,000 lbs. of crushed ore: Rough gold, got before smelting, 3oz. 11 dwts.7 grs., worth $52.60; 5½ lbs

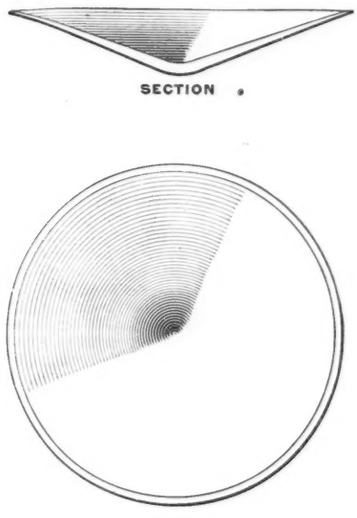


ELEVATION PARTLY IN SECTION.

WATER-POWER QUARTZ-CRUSHING MILL, PACHO NEAR TOMOK.

Scale ½ inch = 2 feet.

FIG. 3.



PLAN

DULANG

Scale, 1 inch=1 foot.

FIG. 4.

of sulphurets for retreatment, 16 dwts., worth $14.75; 28¾ lbs. of sulphurets supposed to be cleaned, 6 dwts., worth $5.60; total gold, about 4 oz. 13 dwts. 7 grs., worth $72.95. The tailings from this (or a similar) washing gave by fire assay, per ton of 2,240 lbs.: Gold, 15 dwts. 16 grs.; silver, 7 dwts. 12 grs.; total, 1 oz. 3 dwts. 4 grs.

As a rule, there seems to be left in the tailings about one-third of the gold originally present in the ore, while there must be a considerable additional loss of float-gold carried away in the process of washing, due to the original fineness of some of the gold in the ore, and to the over-stamping already referred to. The Chinese themselves seem to be of opinion that they get about one-half of the gold originally contained in the stone.

The following example will show how much gold is retained in the tailings. In working a very rich ore, which assayed, per ton of 2,240 lbs.: Gold, 6 oz 12 dwts. 15 grs.; silver, 1 oz. 1 dwt. 9 grs.; total, 7 oz. 14 dwts. The tailings, after three times pounding and washing, still assayed: Gold, 2 oz. 16 dwts. 10 grs,; silver, 5 dwts. 6 grs.: total, 3 oz. 1 dwt. 16 grs. Thus showing that nearly one-half of the proportion of gold originally present was still locked up in the tailings.

The losses above indicated appear enormous, but it must be remembered that the thrifty Chinamen throw nothing away—not even tailings; however completely these may be exhausted, in their opinion, they still pile them up and keep them. When, for any reason, their mill would otherwise be idle, they repound and rewash their old tailings, and always get some gold out of them. The piles of tailings are, however, left exposed, so that a considerable proportion gets washed down into the streams and rivers by the heavy rains that occur at each change of monsoon; and there are a good many Chinese of the poorer classes who make a sort of living by washing the sands in the river-beds, the gold they get being principally, to all appearance, that which has been thrown into the rivers by the miners up stream. It is noticeable that there is no gold, or very little, to be found in the rivers above the points where there are mines in operation. A fair day's work of one Chinaman in the river-bed

(say six hours' actual work) was found, as the average of several trials, to produce an output of 7·3 grains of gold about ·940 fine, worth say $0.28. This quantity of gold was obtained by washing 22 large *dulangs* of gravel, each holding about 70 lbs. of dirt.

It is interesting to note that in custom-milling, of which there is a good deal done here (many of the "fossickers" sending all the gold quartz they collect, whether by mining or picking out of the river-gravels, to one of the water-mills for crushing), the charge made is equal to $3.10 per (long) ton of quartz, this payment including the washing of the gold, but not, so far as I can make out, its cleaning and melting.

It is obvious, from the above description, that the total quantity of stone crushed by all the mills in the district, supposing them all to be going simultaneously, and including the foot-mills, could not exceed some 12 tons a day at the best, an amount that could be far more economically and efficiently handled in a five-stamp Californian mill of moderate power. Yet the total annual output of gold from this district (including, however, alluvial as well as reef gold) is said to be 4,000 taels (4,861 ozs.), fully .900 fine. The total number of men engaged in mining, in one way or another, is close upon one thousand.

NOTES FROM THE FLORIDA PHOSPHATES FIELDS.—III.

Special Correspondence of the Engineering and Mining Journal.

If my last letter had been delayed a day or two I could have graphically described the funeral procession which was formed from the fragments of the convention of phosphate miners. The telegraph reports have announced the bare fact that no action was taken by those who signed the call for the combination, as recommended by the committee; and it is said the wires would have been scorched if one-half of the energetic language, used the last day, had been transmitted.

There was an unctuous promise of cribs full of sweet fodder in the near future, when one fully absorbed the basis fact in the report as offered by the committee Friday night, *i. e*; "to regulate freights and make arrangements with brokers to furnish or advance money to the miners for the purchase and sale of property, and for the manufacture and sale of commercial fertilizers." This single phrase, coming after the recommendation to back the combination with a cash capital of $2,500,000, was sufficient, it seems, to induce many individuals and companies to sign the paper for valid organization of the syndicate, and afterward to meet in secret to perfect all the plans. It is not as yet clear to the dazed members of that secret conclave, what really happened to suddenly end harmonious action, but the disruption of the component parts was assured from the evident weakness of the structure, and some entirely different basis must be, hereafter, offered to bring about the results aimed at.

It is difficult to see at a glance how to harmonize interests so widely at variance as are the enterprises in mining and shipping pebble, hard rock, and soft rock or gravel phosphates. The miners of pebble stand firm upon the statement that all their products, equivalent to the choicest of South Carolina land rock, are marketable at $5@$7 per ton at mines; that such class of phosphate is so well known and easily handled by all classes of manufacturers as to assure an unlimited consumption. The hard rock miners point proudly to the fact that 76% to 80% tri-calcic phosphate in their products is so far above the pebble grades, 65%, as to command all markets on equal terms and the choicer markets at higher figures.

The soft phosphate miner has been saying very little so far; like Uncle Remus' Br'er Rabbit, "He lie low!" But there are initial warnings that he proposes to contest the field from this time on, so that as a result of the triangular struggle there is some hope for the man who is at the other end of the rope—the farmer who finally pays his good money for all the phosphates mined.

It is sure to be a campaign of education in this State, and will eventually result in enriching the holders of phosphate lands beyond all calculations, as no country which has produced this valuable, almost an absolutely necessary, product of civilization, can compete with Florida in the immediate future.

The clouds which obscure solid business operations in production of the raw phosphates are no bugbears to men of ordinary acumen and possessed of sufficient capital to carry on their operations year after year, meeting the markets and the varying conditions of the world's trade in exactly the same spirit as do the large producers of iron ores, lead ores, zinc ores, &c. It is to be expected that workers with limited means will struggle to obtain a footing on higher planes, and that such struggles, with misdirected efforts and desperate means employed, may demoralize the trade for a time. It is the history of all crazes in new fields, whatever the trade may be—oil, iron, copper, precious metals, or even oranges.

As an abstract fact no one has a right to enter the lists without sufficient knowledge and large capital. The great successes of to-day are won on this principle, and the accidents which are so often quoted, do not alter the facts. There is, however, a compensating advantage in the struggle of many for the rewards reaped by few, *i. e*., the lessening of all costs in preparation of materials, freighting, selling, etc., which advantage eventually inures to the benefit of the consumer. As an instance of this fact we might point to the lessened cost of Southern pig iron due to expenditure of large sums of money for modern plants which are under the management of the best expert talent possible to employ, the result of which policy has been to fix the values for like products over the United States, compelling the older concerns to meet prices or go out of business. It will eventually come to fractions in this phosphate industry, and position will have as much to do with success as quality of goods. Skill and capital will deserve success in this trade whenever they combine at the proper starting place, and it is a very strange fact that not one concern in active operation in the State at present has promptly grasped the problem which has been before the manufacturers of the old world for years, and, accepting their experience, solved this Florida problem for all time by manufacture of acid phosphates on the ground.

If a combination of the weaker companies mining hard rock were formed at once to erect acid works at some convenient place for all rail shipments to the surrounding States, they would have a market for 100,000 to 300,000 tons of their products annually, which never could be taken from them. Acid phosphates containing 12% to 14% soluble phosphoric acid can be produced in this city for $8 per ton, and pay miners and works large dividends.

The selling price is $16 per ton at present, and this is the average ruling price over the Southern States. With an experience of a lifetime in this business, it seems to me useless for the 50 odd companies composing the weaker members, those lately attempting to combine for protection of mine products, to expect to compete in any way except by marketing their own goods. Several of the large tracts of phosphate bearing lands are owned and held by manufacturers of fertilizers, and will eventually be worked for the purpose of supplying established factories. Why should others hesitate to enter this field and at once secure a share of the very large profits, at the same time relieving foreign markets of such surplus stocks as now frighten the trade into lowering prices beyond precedent.

Every sort of argument on the bear side of this question is going the rounds of the daily press, to the great detriment of business generally. There is only one sentiment expressed by those really favorable to the best interests of the State, "we all hope that the bottom will be knocked out of wild speculation in lands, so that purchases can be made on such a basis as will enable men of experience and capital to set the wheels of diversified industries in motion everywhere." Every ton of phosphate mined in this State, for manufacture in the State should be exempt from taxation and every ton mined for export to the United States should pay a tax of reasonable amount, the tax increased, however, if shipments are for foreign consumption. This would not bear unjustly upon any well meaning company, but would do for Florida what she deserves, and compensate in a measure for abstraction of her most valuable mine products.

Speaking of soft phosphates brings to mind the many arguments overheard in traveling through the districts devoted to this class of mining, and the evident desire to impress upon strangers the value of finely divided or pulverized raw phosphatic rock for immediate application to growing crops or composted.

This idea is very fascinating and will lead to a trade of large proportions in the immediate future, if worked judiciously through the public press. It reminds me of the experiment made with the furnace slags of Pittsfield, Mass., in the year 1870. Some genius discovered remarkable properties in that waste material, when finely ground, barreled and branded in bright red colors. The sales were large for two seasons, at prices a little lower than Peruvian guano, and, strange to say, based upon the testimonials of reputable farmers in New England, who preferred it in many cases to the latter foreign goods. Several analyses from the agricultural stations of Massachusetts and Connecticut, showing not a trace of available plant food, unless silica and iron were such, pricked the bubble and lost the advertising mediums very fat returns.

I am not classing the soft phosphates, which are ground, sacked or barreled and put on board cars for $6@$7 per ton, with iron slags, but as history repeats itself so often, it would be no more than fair to people who purchase raw fertilizers, because the packages are pretty, or the colors of the brands are bright, or because the newspapers speak glowingly of results obtained in the adjoining county (paid "ads." at regular rates), that the State authorities determine the values in all cases and hold the shippers to as rigid lines as do the foreign buyers in case of the exceptionally high grade hard rock. What a farce the whole system becomes when the 3% iron and alumina limit is exceeded somewhat, and a cargo of hard rock averaging choicer than has been marketed from any other country for years, is thrown over by the self-constituted censors of trade in Great Britain. When they were learning how to use Canadian apatites during the years 1868 to 1876 the miners were subjected to the same course of bullying, and the Carolina rocks were tossed about from one test to another until the miners in each case learned how to treat such customers by demanding and receiving the proper values.

The Britishers are the greatest trading nation on this round earth, and always seem to have gotten what they wished for—that is until lately, when financial centres seem to be shifting. If they can depress prices of raw materials in this State for a year or two, securing to themselves sufficient rock for their home trade, at prices which mean enormous incomes to fertilizer manufacturers, and at the same time planting themselves in the good districts here as miners and shippers of high grade, it will certainly prove them to be sharper traders than ourselves. That the depression in prices of Florida high grade rock is fictitious, and a bit of sharp practice on a single section of our country, is proven by the fact that Carolina rock, river and land, is not so depressed in price.

This country, this State, can control the world's markets for acid-phosphates at the present time, and why should we admit for one year longer the necessity of accepting such prices for raw high grade phosphates as may be tendered by our worthy but sharp dealing brothers from England?

I had an argument on this subject lately, the outcome of the morbidly bear articles which were published by Jacksonville papers as interviews with a prominent English broker. This pronounced bear saw limitless areas of phosphates ready to ship as soon as the ice broke up in the Florida streams, or the roads were macadamized, or the holiday season passed for the sable workers. He advocates *less production*, and tunes this song up to tenor pitch, but there has not been one word written or said for six months on either side of the Atlantic which would indicate a lowering of prices of manufactured goods—fertilizers, so called—to accord with gradually depressed prices of Florida raw products. Carolina rock, at 60%, has not been lowered in price; acid phosphate has remained substantially steady in price, and so with fertilizers, but Florida hard rock bears the brunt of the battle, changing in price from 25d. to 10d. per unit of tri-calcic phosphate within six months.

I argued that a trade reason other than given by the bears, or that has yet appeared on the surface, was responsible for the cautious, yet persistent movement on foot since last June, which has culminated in offers of 10d. per unit, or say $15 per ton for a 75% rock, when delivered in Liverpool.

Every one is fond of stating the universal desire "that the devil shall get his due some day," and the majority of the miners who are putting 75% rock in Liverpool at a cost of about $15 per ton, are saying their prayers in unison just now, but they are not doing any great amount of figuring, or they would paper their front halls and reception rooms with the pretty certificates of stock—issued on a basis of millions for lands costing dollars—and join hands in earnest to take possession of the trade

of this country, and by lowering prices for goods to farmers, swell the trade to double the present tonnage within three years, about the time it will take to wreck the majority of companies if present plans are pursued.

Arguments to settle this vexed question, which seems to come up like a jack-in-the-box before the new men who have entered this field, should include such combined action as will place 100,000 tons of acid phosphates on the market for sale within a year—in time for next fall season's trade; 200,000 tons for delivery within two years, and there is strength sufficient among the weaker companies to thus assert their power.

What if this action does unsettle trade so long and exclusively held by the wealthy fertilizer companies. It benefits everyone else, from the miner of rock in the swamps of Florida, the worker in acids in Florida's cities or towns, and over and above all it gives the farmer the first opportunity in his checkered career to secure acid phosphates as the basis of his own fertilizers at not to exceed $10 a ton, or $1 per unit delivered in main trade centers.

Such a state of trade means the busiest hives of industrial workers over the Southern States that ever civilization created.

I am chock full of facts to bring out all these points and boom the values of phosphate lands in the only way they are worthy of being written up, *i. e.*, to the end that such values shall be held within the State, for the good of her citizens, and not frittered away to enrich outsiders.

OCALA, Fla., Nov. 28. 1891. W. H. ADAMS.

IMPROVED HOLLOW AUGERS.

The improvement of wood-working tools is a subject which is justly receiving considerable attention, with the result that new devices are being daily put upon the market and old devices remodeled. The cuts herewith presented illustrate a recent improvement in tenon cutting tools, which is being introduced by Surpless, Dunn and Alder, of New York,

FIG. 1.

FIG. 2.

Fig. 1 shows an auger adapted for standard cutting, the depth gauge being arranged with an adjustable thumb nut. The knives or cutters are set at an angle and are firmly held by means of set screws at the back of the cutter. The auger is arranged with a shank similar to an ordinary bit and the tools can be used in hand-brace or power chuck. Fig. 2 illustrates an auger with the construction similar to Fig. 1, with the exception that the cutter is arranged for diametric adjustment as well as for depth. The latter tool is suitable for all work from ¼ in. to 1½ in.

DIGEST OF VARIOUS DECISIONS OF THE SECRETARY OF THE INTERIOR RELATING TO THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

PUBLICATION—ADVERSE CLAIM.

An adverse mining claim must be filed within the 60 days of publication and in the computation of such period the first day of publication is excluded.

A misstatement in the published notice as to the termination of the period of publication will not excuse the adverse claimant from filing his claim within the statutory period. *Bonesell et al vs. McNider et al.* [*Rendered Sept.* 15, 1891; *promulgated Nov.* 15, 1891.]

RESERVOIR SITE—DUPLICATE MAP.

Maps or plats filed on application for right of way or reservoir sites must be submitted in duplicate, and the map transmitted to the department must bear the certificate of the register that it is an exact copy of the map filed in the local office. *Charles E. Day et al.* [*Secretary Noble, Sept.* 14.: *promulgated Nov.* 15, 1891.]

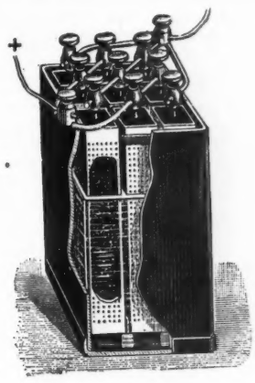
PRE-EMPTION ENTRY—MINERAL LAND.

A contestant who alleges the mineral character of the land that is *prima facie* agricultural must show affirmatively the existence of mineral in sufficient quantity to make the land more valuable for *mining* than for agricultural purposes.

Where a pre-emption entry is attacked on the ground that it covers *mineral* land, it is not a sufficient defense to show that the *mineral* character of the land was not known to the entryman at the date of the entry, if it appears that it was thus known by others at such time, and that the ore was then exposed in such a manner and to such an extent that a person of ordinary intelligence who had been upon the tract could not be ignorant of the existence of the mineral deposit. *Tinkham vs. McCaffrey.* [*Asst. Secretary Chandler, Nov.* 2, 1891.]

THE TOMMASSI ACCUMULATOR.

M. D. Tommassi has brought out a new form of secondary battery in which the active material is contained in tubes of rectangular or circular section, made of lead, ebonite, porcelain or celluloid. These are perforated all over, and act very much like the porous pots in Leclanché cells. M. Tommassi claims that by reason of the thorough utilization of the

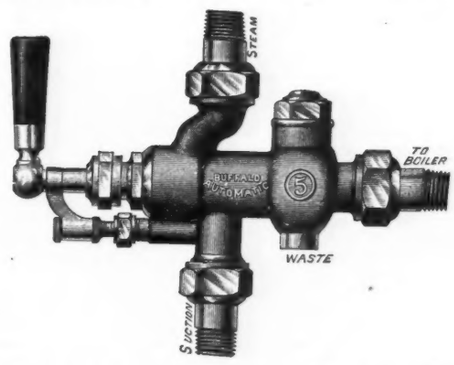


active material, this construction gives from two to six times the usual output for a given weight of lead; and that the ease of making connection with the active material by means of rods of lead is greatly increased. Another great advantage of such a system is that pieces of material cannot fall out and short circuit the plates. The volume of the accumulator is from four to eight times less than those ordinarily in use. A current of 27·3 ampères per pound of electrode is to be used for charging. The accumulators contain 67% active material, and the proportion of coating to lead is 2·1 to 1. The capacity is given as 7·3 ampère hours per pound of electrode, 95% Coulomb and 80% Joule efficiency. For traction purposes, M. Tommassi prefers rectangular celluloid tubes, and for lighting work he finds that leaden rectangular tubes give the best results.

THE BUFFALO AUTOMATIC INJECTOR.

This invention belongs to that class of injectors in which the flow of water is automatically resumed when the feed has been interrupted from any cause, this being effected by a peculiar valve mechanism in which the water-valve and steam-valve are operated simultaneously, whereby the supply of water to the injector is at all times proportionate to the steam supply, both of said valves being operated by one handle. By turning this handle in the proper direction, the steam-valve recedes from its seat and admits steam into the nozzle. During the lengthwise movement of the steam-valve and its stem the water-valve is opened, owing to the yoke connecting the water valve rod with the steam-valve stem, thereby actuating the water-valve simultaneously with the steam-valve at all times. The movement of the steam and water-valves and their relative positions are such that the supply of water will always be in proportion to the supply of steam admitted to the jets, thereby insuring the proper working of the injector and preventing an excess supply of water which is likely to take place when using a water-valve operated independently of the steam-valve. The simultaneous closing of the watervalve with the steam-valve is very desirable when water is supplied to the injector under pressure.

By the operation of the steam and water valves simultaneously, the



capacity of this machine can be graded so that in feeding a boiler a quantity of water can be fed into the boiler equal to the amount that is being evaporated, thus enabling an engineer to run the injector continuously, producing a most economical result in boiler feeding.

It is stated that on a recent test of this machine an injector with one-inch connections, with 65 lbs. steam pressure, would feed at its largest capacity 572 galls. per hour and could be graded down to 277 galls. per hour under same steam pressure.

It will be noted that no valves are required in either steam or supply pipe, the machine being operated entirely by one handle, both in starting and stopping, as well as in grading the supply of steam and water. This device is manufactured by the Sherwood Manufacturing Company, Buffalo, N. Y.

WHY MINING VENTURES FAIL IN SPANISH AMERICA.

Written for the Engineering and Mining Journal by Louis Janin, Jr.

When their successful revolution had exhausted the Mexicans' capital and the Spaniards, the former owners, had withdrawn, they were led to offer an opportunity to foreign capitalists to work their mines on joint account on terms highly favorable to the adventurers.

By act of Congress the one-fifth, or, to be exact, the 17%, which had been the king's royalty during the Spanish rule, was reduced to a 5½% tax on the gross output. Everthing else was done to facilitate the successful handling of the properties.

The English, with the spirit of adventure, so strong in the Anglo-Saxon blood, were the first to accept this offer. They thought with improved machinery, modern metallurgical methods and the reduction of nearly 12% in the gross yield, that not only would their product exceed that of the former owners, but their profits would be doubled. Upon this seemingly logical hypothesis as a corner stone the most fantastic castles were built; promotors overran London, rivalling one another in praise of their properties, and the enormous but certain profits to accrue to the fortunate investor drew many a dollar from the confiding public. At last the crash came. Much to their disgust, the victims found their primary hypothesis entirely fallacious; with all their modern advantages they were unable to compete with the former owners.

After the discovery of valuable mines in the United States Americans branched out, and were fated to pass through a foreign experience similar to that of the English in Mexico. In one day's ride in a sparsely populated district of Mexico it is still possible to see seven deserted reduction works, their tall stacks standing monuments to the blind folly of that period.

Since the wild excitement of that time investors have been more cautious. The properties are subjected, in most instances, to a rigorous and critical examination, possibly by several men of high standing; yet it is discouraging to know that failures still occur, and successes are few and far between.

The mining history of all Spanish American countries is similar to that of Mexico. The same causes interfere with success in Central America as do in Bolivia. Without taking up the instance of confessedly worthless properties, since local conditions have nothing to do with their failures, the reasons for failure may be placed under the following general heads: 1. Insufficient working capital. 2. Insufficient mine development. 3. Labor, its cost and inefficiency. 4. Bad management. 5. Poor metallurgy. 6. Inaccessibility.

Insufficient Working Capital.—Too often the estimate for working capital is left to the promoters rather than to the examining engineer. The promoter, for various reasons, does not desire to increase the amount to be raised, so therefore cuts his estimate down to a minimum. The unforeseen always occurs, and there is a deficiency which may react on either the mine or the reduction works. In any event it is necessary to raise more capital. On the slightest intimation of this necessity the stock falls; the heavier owners, with the proverbial timidity of capital, refuse to send good money after bad, as they term it. Complications arise; the affair drags on for a while until the crash comes, when a set of men leave mining investments never to enter them again.

Insufficient Mine Development.—The Mexican or Spanish system of mining differs radically from ours. In blocking out ground we lay up capital upon which we can draw; the Spaniard is short sighted and apt to regard as foolish that which brings no immediate return. A large quantity of ore may be in sight, but not in a position for economical extraction. Admitting that the ore is low grade and the margin of profit narrow, so large a force is required to extract the daily tonnage—necessarily large in such a proposition—that the expenses exceed the yield. Unless this is perceived and systematic development followed, although it may be temporarily stayed by a strike of richer ore or other fortunate circumstances, the day of disaster will inevitably come with the usual consequences.

Labor, Its Cost and Inefficiency.—A man familiar with Western mining wages considers the Spanish American rates ridiculously low and is apt to promise himself, or others, great economy in working the property. There is no greater fallacy than this. While occasionally in those countries miners can be found comparable to men of any race, it is the exception. Reliance can be placed upon the understanding of the English, Cornish, Welsh, Irish or, best of all, upon the American miner; if responsibility is placed upon their shoulders they rise to the occasion. The Spanish races cannot or will not. Their entire work must be laid out for them. A by no means slight loss in a mine with high grade ore is due to their pilfering habits, although the mines are put to much discomforture by their strict observance of the Sabbath and church festivals.

In certain more remote districts, the difficulty of obtaining laborers, their independence when secured, and their general disinclination to work for an employer's interest is a serious drawback. When, moreover, they are compared with American miners working under similar circumstances in the United States, with the cost of labor per ton of ore produced as a basis of comparison, their inferiority is shown.

If American miners would adapt themselves to those countries—as they do, as a rule, to their worst features—and would work for reasonable compensation, this could be remedied. It must be admitted, however, that the native labor, with all its shortcomings, is the most economical. To a native thoroughly versed in the characteristics of his fellow countrymen the labor question is a serious one. How much more so is it to an American who, in nine cases out of ten, has had no previous experience with this class of labor or personal knowledge of their peculiarities, however successful a miner he may have been in the United States?

Bad Management.—By this is meant bad financial management rather than technical errors. In the many transactions of a large business, opportunities for errors of judgment constantly occur; mistakes in letting contracts, in employing subordinates, and mistakes arising from personal prejudice. If the mine foreman, to be successful, has to be familiar with his environments, how much more so has the manager, upon whom rests the responsibility of all departments. Many failures are on record, due directly to the manager's unfamiliarity wth his surroundings. Others have been caused by his lack of acumen in not securing contiguous ground, and yet others owing to the mental and physical lethargy so many fall into when transferred to a torrid climate.

Poor Metallurgy.—It is possible that bad administration of the metallurgical department has led to a large percentage of the failures. Processes ill-suited to the local conditions or to the ore itself have been adopted. One cannot make a careful examination of the *patio* process in Zacatecas or Guanajuato without perceiving how much local conditions have to do with economical metallurgy. In those localities it has been found impossible, after careful experiments, to improve upon the *patio* either in cost or percentage of extraction.

Inaccessibility.—In the more remote parts of Mexico, Central and South America the cost of freight is a large item in the expense account. When freight from the centers costs from 5 to 15 cents per lb. it is a material disadvantage in working a property. The cost of supplies is doubled. Salt, that most necessary chemical in the milling process frequently costs, as the locality varies, from 3 to 10 cents per lb. When the ore is subjected to a chloridizing roast, and, of necessity, from 5% to 15% of salt is used, the cost of treatment is enormously increased above that of the more favored localities.

The distance and the difficulty of communicating with the central office is another disadvantage of isolation. If lapses and errors occur it may be months before they can be checked and remedied by those financially interested.

Railroad communications and custom metallurgical works have made Colorado, Utah and Montana successful mining states. As the railroad and the smelter have done away with the necessity of costly reduction works, a mine can now pay from the grass roots. It will be many years before similar conditions prevail in Spanish America. Until that time immediate successes such as have been achieved in the United States can hardly be expected.

To conclude, mining is like no other business; a success this year lessens the chances for years to come. It may be said, therefore, that the statements of ancient production have but little weight in fixing the value of a property in modern times. It has been claimed by the unsuccessful that the governments of those countries are hostile and all titles insecure. This is erroneous. The Spanish mining law admits of fewer complications than our own. The governments, far from being hostile, knowing it is to their own advantage, have done everything to secure success to the investors.

DIVIDENDS PAID BY MINING COMPANIES DURING NOVEMBER AND FROM JANUARY 1ST, 1891.

NAME OF COMPANY.	Paid in Nov.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in Nov.	Paid since Jan. 1st.
Adams, Colo.	$7.500	$67,500	Iron Mountain, Mont.		$25,000
Alaska Treadwell, Alaska		300,000	Jackson, Nev		5,000
Alice, Mont	25,000	75,000	Little Rule, Colo	$10,000	110,000
American, Idaho		100,000	Maid of Erin, Colo	139.725	419,175
American Belle, Colo.		50,000	Mammoth, Utah	40,000	280,000
American Coal, Md.		90,000	Maryland Coal, Md.		105,000
Aspen, Colo.		80,000	Maxfield, Utah		36,000
Atlantic, Mich		40,000	Mayflower Gravel, Cal		75.000
Aurora Iron, Mich.		100,000	May-Mazeppa, Colo.		125,000
Bald Butte, Mont.		40.000	Minnesota Iron, Minn		840,000
Ballarat-Smuggler, Colo		6,000	Mollie Gibson, Colo.	200,000	900,000
Bannister, Mont.	6,000	66,000	Montana Ltd., Mont.		80,100
Bates-Hunter, Colo	2,500	55,000	Morning Star, Colo.		50,000
Best Friend, Colo.	10,000	60,000	Morning Star D., Cal.	1,200	21,600
Big Hole Placer, Mont.		1,500	Mt. Diablo, Nev.		20,000
Bimetallic, Mont.	70,000	770,000	Mt. McClellan, Colo.		12,540
Boston & Mont., Mont.	125,000	500,000	Napa, Cal.		40,000
Bull-Domingo, Colo.		29,000	New Guston, Colo		390,000
Calliope, Colo.		5,000	Newton, Cal.		5,000
Calumet & Hecla, Mich		1,500,000	North Banner Cons., Cal.		20,000
Centennial-Eureka, Utah	30,000	300,000	North Commonwealth, Nev.		25,000
Central, Mich.		20,000	North Star, Cal		50,000
Champion, Cal.	3,400	39.100	Ontario, Utah	75,000	825,000
Clay County, Colo.	4,000	44,000	Osceola, Mich		150,000
Cœur d'Alene, Idaho	10,000	80,000	Parrot, Mont.	18.000	378,000
Colorado Central, Colo.		13.750	Petro, Utah		25,000
Con. Cal. & Va., Nev		216,000	Plumas Eureka		70,256
Copper Bell, Mont		13,500	Quicksilver, Pref., Cal.		118,000
Coptis, Nev.		55,000	Quincy, Mich.		400,000
Cortez, Nev		250,000	Red Cloud, Idaho		93,000
Daly, Utah	37.500	412,500	Retriever, S. Dak.		20,000
Deadwood-Terra, S. D.	10,000	40,000	Rialto, Colo	3,750	32,250
DeLamar, Idaho		144,000	Richmond Cons., Nev.		33,750
Derbec Blue Gravel		20,000	Rocky Fork Coal, Mont.		100,000
Dexter, Nev		50,000	Running Lode, Colo.	5,000	30.000
Elkhorn, Mont		300,000	Sheridan, Colo		75,000
Enterprise, Colo.	250,000	250,000	Sierra Buttes, Cal.		25,000
Franklin, Mich		80,000	Silent Friend, Colo.		47,000
Glengarry Mont		10,000	Silver Glance, Colo		4,500
Gold Rock Colo	2,500	23,750	Silver Mg. of L. V., N Mex.		75,000
Granite Mountain, Mont	100,000	1,300,000	Standard, Cal		10,000
Gt. Western Quicksilver, Cal.		25,000	Tamarack, Mich.	200,000	800,000
Hecla Con., Mont.	15,000	165.000	Teal & Poe, N. Mex		5,250
Helena & Frisco, Mont.	29,000	170,000	Whale, Colo.		5,000
Helena & Victor, Mont.		10,000	W. Y. O. D., Cal.		4,500
Homestake, S. D.	12,500	137,500	Yankee Girl, Colo.		260,000
Horn Silver, Utah		150,000			
Idaho, Cal.	6,200	86,800	Total	1,442,275	15,519,871

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects issued by the United States Patent Office:

TUESDAY, DEC. 1ST, 1891.

464,083. Ore Crusher. George Raymond and Albert Raymond, Chicago, Ill.
464,096. Apparatus for Obtaining Metals of the Alkalies from Molten Chloride. Ludwig Grabau, Hanover, Germany.
464,097. Process of Obtaining Metallic Sodium. Ludwig Grabau, Hanover, Germany.
464,103. Furnace for Roasting Ores. Francis O'Brien, Elizabeth, N. J.
464,129. Manufacture of Artificial Stone. Ludwig Grote, Dresden, Germany.
464,223. Air compressing pump. Ernest C. Fasoldt, Albany, N. Y., assignor of one-third to John Boyd Thacher, same place.
464,229. Basic hearth steel making furnace. James Riley, Glasgow, Scotland.
464,340. Rock drill. Henry S. Grace, San Francisco, Cal., assignor to Jacob A. Fischer, same place.
464,374. Mining machine. Lewis W. Le Grand and Joseph Klotz, West Pittston, Pa.
464,395. Method of making alloys. Samuel Singley, New York, N. Y., assignor to the Magnolia Anti Friction Metal Company, of New York.
464,431. Ore washer. Homer S. Davis, Stillwater, Mont.
464,463. Crushing and pulverizing machine. Robert McCully, Philadelphia, Pa.

PERSONAL.

Mr. Thomas Nelson has been elected a director of the Santa Fé Copper Company in place of the late Irving A. Evans.

Mr. Lee Peck has tendered his resignation as superintendent of the Saginaw iron mine of Michigan. He has been succeeded by Mr. T. H. Bargh.

Mr. J. F. Armstrong, late superintendent of the Fitch iron mine, of Michigan, has been tendered the superintendency of the Hemlock mine, Menominee Range, Mich.

Mr. Johnson Vivian has resigned the superintendency of the Huron Mining Company, of Houghton, Mich., and Mr. Graham Pope has been appointed to fill the vacancy.

Mr. Ludwig Dreier has retired from the firm of Naylor & Co., New York, and will associate himself with the Aluminum Steel and Alloy Company, of New York, and Findlay, O.

Mr. August Raht, well known in lead smelting circles in Montana and Colorado, has accepted the position of metallurgist of the Philadelphia Smelting and Refining Company, at Pueblo, Colo.

Dr. F. M. Endlich, mining engineer and metallurgist, recently of Ouray, Colo., has been appointed manager of the mines and mills of the San Gabriel Mining and Milling Company, near Azusa, Los Angeles, Cal.

Vice President and General Manager Carpenter of the Duluth & Iron Mountain Railroad Company, a corporation owned by the Illinois Steel Company, has been promoted to the presidency of the railroad. He is succeeded in the vice-presidency by Mr. C. W. Hillard.

C. R. Van Hise, professor of geology and mining engineering, University of Wisconsin, and in charge of the Lake Superior division of the U. S. Geological Survey, in company with E. R. Maurer and E. B. Mathews, is making a final tour of the Menominee Iron Range of Michigan. The party has just completed a geological and topographical survey of that section.

Messrs. Nicholas Bandanoff and Roman Levitsky, of St. Petersburg, Russia, representatives of the Russian Government, have arrived in San Francisco for the purpose of visiting and reporting upon the mining industries of California. Rich placers exist in the Ural Mountains and the Altai of Siberia, but the machinery at present in use is very primitive and it is with a view to remedy this defect that the two commissioners are visiting America. Already the visiting commissioners have inspected the gold placers of South Carolina, Colorado and Utah, and while in California will investigate more particularly the mines of Amador, Calaveras, Placer, Shasta, and Yuba counties. They are particularly desirous of gaining a knowledge of the working of the hydraulic mines of the American, Feather and Yuba rivers.

OBITUARY.

Thomas Higgin, a prominent salt manufacturer of Liverpool, Eng., died last week.

George Teal, a well known mining operator of Boulder, Colo., died suddenly at San Diego, Cal., on the 26th ult.

William C. Allison, president of the Allison Manufacturing Company, car builders in Philadelphia, Pa., died on the 29th ult.

George W. McKee, major of ordnance United States Army, who has been in charge of the Frankford, Pa., Arsenal for a year, died on the 30th ult. of heart disease, aged 49 years.

A. R. Blood, a wealthy oil man, about 30 years of age, was thrown from his horse on the 1st inst., at Warren, Pa., and instantly killed. He was one of the largest operators in the northern region of Pennsylvania, and was the owner of the largest carbon-black works in the country.

Jabez Marshall Woodward, a well-known engineer, died of pneumonia on the 29th ult. in Brooklyn, N. Y., aged 84 years. He built many railroads in Illinois, cleared the Savannah River of obstructions after the war, and his last work of importance was the building of a ship canal across Keweenaw peninsula.

SOCIETIES.

The American Chemical Society will hold its fourth general meeting Dec. 29 and 30 at the University of New York, New York City. Invitations are being mailed to all chemists in the United States and Canada, and all are invited, whether reached by mail or not. It is proposed to make this meeting a noted occasion in the history of chemistry in America, and to have the largest gathering ever before held.

INDUSTRIAL NOTES.

The Maryland Steel Company at Sparrow's Point, Md., has put another furnace into blast, making a total of four. The company's plant is the only one in the world which rolls a six length rail.

At a meeting of the stockholders of the New York & New Jersey Bridge Company, held on the 27th ult., in this city, the consolidation of the New York company with the New Jersey company was confirmed. The building contract with the New York & New Jersey Construction Company was also confirmed.

The Radford Pipe and Foundry Company is negotiating, it is reported, for the purchase of the plant of the Radford Crane Iron Company, at Radford, Va. It is also rumored that the Radford Pipe and Foundry Company will shortly begin the erection of two additional blast furnaces to supply its plant with pig iron.

The sale of the late National Forge and Iron Company's rolling mill at East Chicago, Ind., to Weaver, Getz & Company, of Chicago, has been confirmed by the Indiana Court, subject to any higher bids being received by the receiver on or before December 15th. This is authentic, notwithstanding some reports to the contrary which have been circulated by the officers of the insolvent corporation.

The Jeffrey Manufacturing Company, of Chicago, Ill., informs us that among its recent sales are complete outfits of conveyors and elevators for the New Pittsburg Coal and Coke Company, the Matthiessen & Hegeler Zinc Company, phosphate conveyors for Florida, elevator for the Elkhart Water Company, coal conveyors for the Joliet Enterprise Company, elevators and screens for the Victor Coal Company, conveyor for the Western Reduction Company, and pan conveyors for the Montana Mining and Reduction Company.

Mr. A. W. Storms, western agent for Hanson, Van Winkle & Co., Newark, N. J., dealers in nickel and electro-platers' supplies, etc., informs us that they had a remarkably fine western trade during the fall, both in the installation of plants and in the general line of supplies. A large part of their new trade is due to the successful operation of their new dynamo, which is giving much satisfaction, and it appears to have caught the public fancy. Within the next two weeks they will issue an entirely new catalogue, which will contain a number of special features which are not shown in any other catalogue, and which will be of special interest to metal platers and others in that line.

The Gilmore Eustis Rolling Mills, in Cambridgeport, Mass., have discontinued operations. The reason of the stoppage is that old rails, which for many years had been the principal raw material used, are now so scarce as to make running impracticable. The business at the mills was originally the re-rolling of Norway iron, but it gradually changed to the working of scrap iron into bars and rods, and later into the working of old iron rails into merchant iron, which has been the character of the work for the past 10 or 12 years.

The Wm. Cramp & Sons Ship and Engine Company, of Philadelphia, Pa., is making extensive changes in its plant and has placed the contract for a new boiler shop with the Berlin Iron Bridge Company, of East Berlin, Conn. This boiler shop will be constructed entirely of iron, and will be composed of two parts—one part 55 ft. in width by 350 ft. in length, made very high between joints on account of moving large marine boilers over each other. This portion of the building is controlled by a 50-ton traveling crane which is to be furnished by Wm. Sellers & Co., of Philadelphia. Connected with this main portion will be a wing 58 ft. wide by 370 ft. long, served the whole length by a 20-ton Sellers traveling crane. The building is composed entirely of iron from the designs of the Berlin Iron Bridge Company, and will be one of the most complete of its kind, as no pains or expense has been spared to make it perfect in every detail.

The Henry Heil Chemical Company, of St. Louis, Mo., has recently issued a handsomely bound catalogue of 447 pages, descriptive of the various kinds of chemical and scientific apparatus manufactured by the company and carried in stock in its capacious warerooms. Besides having an extensive line of domestic goods, this firm also ranks as a leader in the importation of all instruments that cannot be advantageously manufactured at home. The most exacting chemist requiring, complicated devices in glass or metal might, find in its exhaustive lists goods adapted to all scientific purposes. To speak in detail of the various departments of this enterprising concern would require a pamphlet. Suffice it to say that the chemist, assayer, metallurgist, physicist, botanist, or naturalist, may each find in this volume, supplies for use in his respective line. The concern makes exporting a prominent feature of its trade and is favorably known abroad. While the catalogue is a compilation of scientific subjects in detail, its admirable index arrangement makes it possible to readily turn to any desired subject with ease. The closing pages of this volume are occupied with an alphabetical list of scientific books, by prominent authors, which are obtainable at moderate figures. The compilation and general composition of the book reflects great credit on this progressive concern.

President William Weihe of the Amalgamated Association of Iron and Steel Workers, said on the 2d inst.: "There is no truth at all in the report that the iron manufacturers have decided to present a united front, and to attempt to drive the Amalgamated Association out of existence the coming year. That is one of those wild reports occasionally started by some unreliable newspaper for the purpose of creating a sensation, expecting some one for the moment to attach importance to it, though knowing that there is no foundation for it. I am satisfied the manufacturers are pleased with the Amalgamated Association as an organization and favor its principles. They know that when the scale is signed for the year they can proceed to make contracts with the assurance that the members will continue at work. Under the old régime manufacturers were never certain that they would be running the next day. In fact, men would sometimes stop in the middle of a turn and go home, and the millionaires had no redress and were compelled to suffer great loss. Two non-union mills are running in Pittsburg, the Solar Iron Works and Moorhead Brothers & Co.'s, though in each we have union men in certain departments, and it is only a question of time when both concerns will recognize the Amalgamated Association. They have been running at a loss, and no one knows that better than experienced iron workers. Personally, I do not think the manufacturers could, if they would, or would, if they could, destroy our association. It has been an important factor in the prosperity of iron manufacturers, and I may say, of the entire country, including, as it does, the best skilled workmen of the United States."

James P. Witherow, of Newcastle, Pa., manufacturer of furnace and rolling mill equipments, was on the 2d inst., granted the four years' extension by his creditors asked for by him a week ago. There were 54 creditors at the meeting, and the sentiment was unanimously in Mr. Witherow's favor. The committee appointed last week consisting of Wharton McKnight, H. N. Atwood, and George B. Berger, reported that they made a thorough investigation of Mr. Witherow's books, and found his statements to be correct in every particular. They therefore recommended that the four years' extension asked for by Mr. Witherow be granted; that he execute a mortgage on his works at New-Castle for the amount of his indebtedness, and pay the principal at the rate of 25% per year with interest at 6%, payable semi-annually. The committee further recommended that $82,000 due Mr. Witherow by the Sheffield Iron Company of Alabama, now tied up in the United State Courts, be hypothecated, and the money turned over to a trustee for the benefit of the creditors. So much of the report as related to an extension was unanimously adopted by the creditors, but that part in reference to hypothecating the $82,000 was stricken out, as creditors were of the opinion that it would practically tie the hands of Mr. Witherow and seriously embarrass him. All those present voted in favor of granting the extension, provided that 85% of the creditors assented to it. Those so voting represented $150,000. As the total is $273,225.63, this leaves about $120,000 yet to be secured, and as several large creditors had given their proxies in favor of extension, the balance necessary to make up the 85% will be signed for at once. Mr. Witherow expects to resume charge of his works at Newcastle in a few days, when Receiver Thompson will be discharged.

It is authentically stated that the organization of the Westinghouse Electric and Manufacturing Company was practically completed last week by the covering into its treasury of $1,000,000 in cash by Messrs. August Belmont & Co., Lee, Higginson & Co., and Brayton Ives, in payment for a similar amount of preferred stock, the sale of which they had guaranteed, and by the issue of $2,000,000 of preferred stock in cancellation of a like amount of debt. The Reorganization Committee will complete its work by authorizing the Mercantile Trust Company to notify the holders of its receipts given to stockholders of the Westinghouse Company, the United States Electric Lighting Company, and the Consolidated Electric Light Company that it will issue regular certificates in exchange for such trust receipts. A year ago the Westinghouse Company was so seriously embarrassed that few believed that there could be found a favorable solution of the difficulties. The company was hampered by heavy rental expenses, due to the control of the United States Electric Lighting Company and the Consolidated Electric Light Company, and its money was tied up by the deferred accounts receivable and in heavy stocks of material, so that the continuance of regular business was difficult. During the year the company has not only continued its business, but has paid interest on its debt, cash for its supplies, and, out of collections and earnings, has reduced the liabilities of itself and leased companies over $750,000. Funds are now available to cancel all of the floating debt and to provide for the business, while it has over three-quarters of a million dollars of its stock in the treasury for future purposes. Its accounts receivable and material in stock nearly equal in value the entire issue of preferred stock, while it has in its treasury a large amount of bonds and stock of lighting and power companies available for further working capital. The business for 1891, it is estimated, will aggregate $30,00,000.

WORLD'S FAIR NOTES.

The Department of Electricity is making an effort to secure a complete collection of historical electrical apparatus, in order to show the progress of the science from early times.

Mexico has made a World's Fair appropriation of $50,000. This is only preliminary, however, and it is fully expected that the whole of the $750,000, which was asked for, and perhaps more, will be voted.

The Edgemore Bridge Company, of Pennsylvania, has secured the contract for furnishing the 10,000,000 lbs. of iron to be used in the administration building of the World's Columbian Exposition, at $4\frac{23}{100}$c. per pound.

The great dome of the Administration building, which will be the most conspicuous architectural feature of the Exposition, and the four smaller domes, will be covered with a new alloy of aluminum, which is said to glisten as brightly as gold. The contract for gilding the domes has been let for $54,000.

Sir Henry Trueman Wood, of the Royal British Commission on the Exposition, says the list of intending exhibitors is growing rapidly, and the success of the British section is already secured to an extent beyond any hopes that were at first entertained. He is convinced that the interest in the enterprise will continue unabated. The exhibit of textiles and pottery will be especially good.

Among the most interesting exhibits in the Mines and Mining Building will be a collection of the implements used by the "Forty-niners" in California. Commissioner Mark L. McDonald has undertaken to collect a number of relics of the old miners' fraternity and send them to the Fair. Chief Skiff has also been promised an old placer plant in complete hydraulic operation. He will also have an exhibit of the primitive methods employed by the early miners of New Mexico in reducing ores.

Medusaline, a new composition designed as a substitute for brick and building stone, has been adopted for the sidewalks and driveways in the Exposition grounds. The Committee on Grounds and Buildings granted the contract to the Medusaline Manufacturing Company, of Chicago, for the construction of 450,000 sq. ft. of such sidewalks and driveways. The price is 6¼ cents per sq. ft. The concrete composition to be used by the contractors is said to be as hard as perfect stone, and it is now thought probable that it will be used instead of staff for the exterior ornamentation of the Fine Art Palace, and several other buildings.

A very notable diamond exhibit from Cape Colony, South Africa, will be made by the De Beers Consolidated Mines Company, Limited. This exhibit will give visitors to the Exposition an idea of the various processes through which the gems pass from the time they leave the mine till they reach the hands of the jeweler—crushing the blue, diamondiferous clay, washing the earth by means of a rotary washing machine, cradling the pebbles obtained from the last process through a pulsator, hand-sorting for the small stones and cutting and polishing the stones. In the Cape Colony exhibit will also be a mass of crystal, elevated on a pedestal, equaling in weight all the diamonds found in the Kimberly mines since 1870. Cape Colony has appropriated $25,000 and the De Beers Company has voted to expend a like amount.

The party which, under the direction of Chief Putnam, of the department of ethnology, of the Exposition, has been making excavations of the mounds in Ohio for three months or more, met with rare success on November 14th near Chillicothe, in making one of the richest finds of the century in the way of prehistoric remains. While at work on a mound 500 ft. long, 200 ft. wide and 28 ft. high the excavators found near the center of the mound, at a depth of 14 ft., the massive skeleton of a man incased in copper armor. The head was covered by an oval-shaped copper cap; the jaws had copper moldings; the arms were dressed in copper, while copper plates covered the chest and stomach, and on each side of the head, on protruding sticks, were wooden antlers ornamented with copper. The mouth was stuffed with genuine pearls of immense size, but much decayed. Around the neck was a necklace of bears' teeth, set with pearls. At the side of this skeleton was a female skeleton, the two being supposed to be those of man and wife. It is estimated that the bodies were buried fully 600 years ago. The excavators believe they have at last found the king of the mound builders.

Dr. William B. Clarke, professor of geology at Johns Hopkins University, Baltimore, Md., and director of the Maryland State Weather Service, thinks Maryland should illustrate its varied climatic and geologic resources at the World's Fair. He says: "There is no State in the Union that has a better opportunity of presenting at the World's Fair an attractive display of its natural products and climate than Maryland. This is due primarily to the fact that the diversified resources of the State cannot be excelled in any other portion of the country. Nearly the entire sequence of geological deposits is exhibited in Maryland in a degree not equaled in any other State. As the limits of a particular geological formation are the limits of a particular economic deposit on a particular soil, their determination is of the greatest practical importance. The Johns Hopkins University, with the hearty support of the United States Geological Survey, has obtained facts and collections that afford a wide knowledge of the economic wealth of the State. An exhibit would show the formation of deposits and soils, the curious and important types of animal and plant life. They contain and draw attention to the wealth that is stored in the mountains, hills and plains of Maryland. Not only her mines, building stone, soils and economic deposits may be thus accounted for, but the position of her harbors, oyster grounds, railroads and centers of population and wealth."

EXPORT NOTES.

During the first six months of 1890 there were imported from Belgium 15,675 kilos of nickel and copper, and in the same period of 1891, 953,347 kilos.

The Mexican International Steamship Company is making strenuous efforts to have its new line from Philadelphia to Mexican ports in operation early in January. The office of the company has been in receipt of numerous inquiries in regard to rates and facilities for forwarding freight to the various Gulf ports.

The Mexican tariff law has been amended by the following decree:

ART. I. Foreign merchandise dutiable upon importation, under the tariff of the general customs ordinance, upon introduction into the Federal district, shall not be taxed with more than 5% duty on consumption, based upon the total amount of import duty.

ART. II. Foreign merchandise exempt upon importation from payment of duties, under the tariff of the general customs ordinance, shall not, upon introduction into the Federal district, bear any other duty.

ART. III. The provisions of the toll tariff as obtaining in the Federal district, and issued under date of June 16th last, are hereby repealed in so far as they contravene the present decree.

ART. IV. This decree shall take effect on the first day of November next.

Two exhibitions are shortly to be held in St. Petersburg. The first one is an electrical exhibition in connection with the *Société Impériale Polytechnique Russe*. The exhibition will be held in the center of the capital, and will be opened about the middle of December, and closed on March 15th, 1892. The principal object of the exhibition is said to be to enable the Russian Government to choose the best system, with a view to the inauguration of comprehensive electric lighting schemes in the principal towns of Russia. The exhibition will be divided into the eight following groups: (1) Electric generators and transformers; (2) cables, wires, etc.; (3) electric lighting, lamps, projectors; (4) telegraphy, telephony; (5) measuring and regulating instruments; (6) electricity in chemistry, metallurgy, engineering, mining and horticulture; (7) the application of electricity in medicine and surgery, and (8) steam boilers steam and gas engines, &c. The second exhibition, which will be opened in the middle of April next, is an exhibition of means and appliances for the prevention of fire. It will consist of six sections, viz., means to prevent fires, apparatus for the discovery of fires, engines and chemical compositions for extinguishing fires, appliances for saving life and aiding the wounded, means of transport for firemen and engines, and organization of firemen, statistics and literature. In the first section will be included fireproof construction, systems of heating and lighting, canalization of electricity, lightning conductors, composition for rendering materials incombustible. There will be medals and awards, besides prizes in money for the inventions that are considered to possess great utility.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column, and his address will be furnished to any one desiring to supply him.

Any one wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

2,459. Estimates for four miles of small pipe, stand-pipe, pumps, etc., for water works. Texas.

2,460. Hand or horse power powder press for export. New York.

2,461. Planer, matcher, molder, shaper, tenoner, re-saw, rip and cut-off saws, gig or band saw, and boring machine. Tennessee.

2,462. A brick machine that will make 8,000 to 10,000 per day with a 10 H. P. engine and boiler. North Carolina.

2,463. Latest and cheapest devices for iron molding, such as washers, sash weights, light castings, etc. Alabama.

2,464. A cord wood saw on a carriage, arranged to cut logs 30 to 40 ft. long into pieces 2 to 4 ft. long; also an engine for running same. North Carolina.

2,465. A hand repress brick machine. North Carolina.

2,466. Iron fronts, cornice, roofing, etc. Kentucky.

2,467. Traction engines, tramways (three miles or more), cars, hoisting, mining and screening apparatus for phosphate mines. Florida.

2,469. Canning factory outfit. South Carolina.

2,470. A saw mill and electric motors, if they can be used to advantage in a fiber mill. New Jersey.

2,472. Machinery that will saw staves 36 in. long and of sufficient widths to make barrels 21 in. across the head. South Carolina.

2,473. A 30-H. P. boiler, a 25 H. P. engine, a 5-H. P. automatic high speed engine and crushing machine. Also drills, lathes and planer to manufacture emery wheels. Georgia.

2,474. Pipes, fittings, etc. Mississippi.

2,475. A hair and husk picker; also wire mattress goods. North Carolina.

2,476. A good smutter for a corn and flour mill. North Carolina.

2,477. A stave mill and a re-sawing machine for making re-sawed siding. Virginia.

2,478. A good second-hand 14 × 16 air compressor. Tennessee.

2,479. Four good second-hand coal mining machines. Tennessee.

2,480. A good second hand 75 to 100-H. P. return tubular boiler. Tennessee.

2,481. A corrugated roll slack crusher. Tennessee.

2,482. Iron coils in one piece for nitro-glycerine apparatus. Michigan.

AMERICAN GOODS WANTED ABROAD.

2,468. Wire cable for a tramway. Mexico.

2,471. Machinery to grind burnt bones for making blacking. New Zealand.

GENERAL MINING NEWS.

The iron ore shipments from the Vermilion Range via Two Harbors for the season aggregate 885,521 tons, as follows: Minnesota, 512,987; Chandler, 369,485; Pioneer, 3,049. This is an increase of 14,673 tons over the output of last year, it being made by the Chandler, whose increase aggregated 36,525 tons, while the Minnesota's output fell 11,008 tons short of its 1890 output. The output made by the Gogebic Range mines by way of Ashland aggregated 1,153,327 tons. The shipments from Escanaba for the season aggregated 3,060,000. These figures are all subject to revision. Returns from the shipping ports of Marquette and Gladstone are yet to be received, as well as all rail shipments from the various mines.

SOCIETE ANONYME DES MINES DE LEXINGTON.—This company is working its usual number of men in the Lexington mine at Butte, Mont. A rich strike was made recently on the 300-ft. level, and work will be begun on a raise from the 400 ft. to the 300 ft. level. The diamond drill has been abandoned, owing, it is said, to the difficulty of getting a diamond setter. Prospecting is still continued on the 600 ft. and 1,200 ft. levels.

ALABAMA.

JEFFERSON COUNTY.

SLOSS IRON AND STEEL COMPANY.—This company is putting in a Luhrig coal washer at its coke works at Birmingham. The washer will have a capacity of 350 tons per day of 10 hours. It will be ready for operation early in December.

WALKER COUNTY.

AMERICAN COAL COMPANY.—This company has been organized at Birmingham, Ala., with a capital of $250,000. The company has purchased 2,500 acres of valuable coal land lying around Parrish Junction, eight miles from Jasper, and has also secured options on 4,000 acres more of mineral property adjoining that already purchased. Three new mines are now being opened at Parrish Junction. The output will be 1,000 tons daily at first. The company will build furnaces and coke ovens.

ARIZONA.

MOJAVE COUNTY.

(From our Special Correspondent.)

GOLD MINING COMPANY, OF ARIZONA.—The mill of this company at Music Mountain Camp has recently started up with an ample supply of ore and water. A second Wiswell crushing machine is being installed, the large output of the mine warranting the addition.

YAVAPAI COUNTY.

(From our Special Correspondent.)

The sale of the extensive onyx quarries near Mayer's Station on Big Bug Creek, 28 miles south of Prescott, to Chicago parties has been declared off.

CALIFORNIA.

AMADOR COUNTY.

PLYMOUTH CONSOLIDATED GOLD MINING COMPANY.—The secretary of this company, Mr. H. W. Lazelle, has submitted to the stockholders the following financial statement to November, 1st: "Surplus January 1st, 1891, $22,258.93; miscellaneous receipts, $2,350.16; gold bullion produced April, $5,812.68; May, $3,011.96; June, $4,305.91; October, $3,554.11; total, $41,293.75. January expenses, $2,313.68; February, $2,496.39; March, $2,605.76; April, $3,049.84; May, $3,016.22; June, $3,493.50; July, $3,263.20; August, $2,828.26; September, $3,298.07; October, $4,253.15; total expenses, $30,618.07. Surplus, $10,675.68. At the date of previous statement, July 23d, we had just started the new tunnel on No. 2 level, to connect the shaft with the body of ore discovered in the upraise. The tunnel has now progressed 450 ft. The superintendent expects to strike the lode line at 700 ft. From that point to the upraise is 218 ft. Should we make same average rate of progress in the future as in the past, the lode line will be reached early in January. In continuing the tunnel on that line toward the upraise we hope to encounter some good ore; but this is only conjecture. On October 1st 10 stamps were started on the ore previously accumulated from the east ore body of No. 2 level. The clean-up showed a fairly good result, the rock averaging about $8.50 per ton. Until the new tunnel strikes the larger ore body we hope to pay expenses with the 10 stamps now running."

NAPA COUNTY.

BRADFORD.—This quicksilver mine, with the lands surrounding it, has been sold by the Bradford family and associates in the business to D. O. Mills, J. B. Randol, and Thomas Bell. The price paid has not been made public.

SHASTA COUNTY.

GLADSTONE.—The reports from this mine at French Gulch are encouraging, says the Shasta *Free Press*. It is claimed that there is now in sight enough ore to run the mill constantly for the next three years. Work will be commenced on the fourth tunnel shortly, which will tap the ledge 1,000 ft. down. There is a solid backing of ore, and the owners can run on the ledge from the third tunnel up to the first. An Edison dynamo has been purchased with which to run the electric drills. There is much free gold in the ore, and most of it is good milling rock. The last monthly clean-up amounted to $13,000.

YUBA COUNTY.

(From our Special Correspondent.)

JEFFERSON GOLD QUARTZ MINING COMPANY.—The property of this corporation in the Brown's Valley district was some years ago a large bullion producer, and in three years yielded the owners $250,000. Owing to litigations the works were closed down, but now, all outstanding claims having been disposed of, work is being resumed. Hoisting works and a quartz mill, having a capacity of 200 tons of ore per day, are being erected.

COLORADO.

DOLORES COUNTY.

UNION-CARBONATE.—It is reported that this group of mines, situated on Mineral Hill at Rico, were sold to G. W. Hall, of Georgetown, for $75,000 on the 27th ult. The deal was made through A. T. Hathaway and W. W. Parshall, of Rico. The Union-Carbonate group is one of the most promising mining properties in the Rico district, and has now, it is said, blocked out ready for stoping over 5,000 tons of ore, that will average about $60 per ton in lead and silver. The ore is very desirable for smelting purposes, and will find a ready market at the Denver and Pueblo smelters, with a moderate shipping tariff. The new management has a small force of men making air connections, and otherwise preparing the mine for extensive operations. Mr. Hathaway will probably be resident superintendent of these properties.

GILPIN COUNTY.

NEW CALIFORNIA LIMITED.—The October output was 560 tons, yielding 272 ozs. of gold, valued at £860, at a cost of £790; expenditure on mine development and exploration account amounted to £60.

LAKE COUNTY.

AMERICAN MINING AND SMELTING COMPANY.—A bill was filed in the Circuit Court at Chicago, Ill., on the 27th ult., by Sarah A. Edith, Virginia I. Copland and M. N. Lamb, all of Washington, D. C., asking for the appointment of a receiver for the American Mining & Smelting Company, which is an Illinois corporation. The complainants say that in October, 1889, they owned stock in the company of the par value of $321,000. It is alleged that a month later Daniel P. Ells and C. A. Otis, directors of the company, entered into a conspiracy to secure all the assets for their own use. With that end in view they notified part of the stockholders to be present at a special meeting, at which a misleading statement of the company's affairs, showing it to be heavily involved was made. The stockholders were thus induced to turn over to the defendants all of the company's property, the defendants assuming its indebtedness. Complainants allege that this act was in fraud of their rights, and ask for the appointment of a receiver. The company owns large smelting works at Leadville, and several mines. During the past five or six years it has been carrying on extensive mining operations, developing its own property, and other mines secured under lease and bond, with indifferent success.

(From our Special Correspondent.)

CATALPA MINING COMPANY.—Manager North is putting the Catalpa into first-class shape, and is shipping a considerable amount of argentiferous iron ore, large bodies of which are disclosed in its workings, both from the Discovery shaft, at a depth of 300 ft., and the so-called Estey shaft higher up. This iron possesses a higher silver value than usual, and carries a large excess of iron and manganese over the silica in the ore.

CRESCENT MINING COMPANY.—The main incline on the Crescent is doing well, though the greater proportion of the shipments come from the so called "Iron shaft" workings. The Catalpa and Crescent properties, being under the same management and connected under ground, the prospecting is thereby greatly facilitated.

MAID OF ERIN SILVER MINES, LIMITED.—The second quarterly trial balance which has just been struck off and sent to London is as follows: Mines and plant, $2,910,000; improvements, $17,874.65; London office, $2,503.40; real estate, $1,000; cash on hand, $108,517.18; total, $3,039,895.23. Mines and plant, $2,910,000; profit and loss, $129,895.21; total, $3,039,895.21.

During the quarter a great many improvements have been made, both on the surface and underground. The powerful electric lighting plant is rapidly approaching completion, and will be in full running order in a day or two. This will light all the shaft, engine, and boiler houses on the property, every station in the mine, and all points on the hill with so much light that every inch of the ground will be at once available, day or night. An extension has been made to the machine shop, which is now one of the most complete in the State, and all repairs required in the operating of so much mining territory will be done on the spot. Owing to the fact that a certain proportion of the sulphide ore broken contains considerable moisture, a most perfect drying arrangement is now in process of erection at the Henriett shaft in order to facilitate the handling and immediate shipment of the ore in a dry state. It will have a capacity of about 90 tons a day, which will be amply sufficient, as the remainder of the sulphide contains but little, if any, water.

All ore from the Adams Discovery shaft workings, and that from the Wolftone ground, are hoisted through the Adams, and in order to accommodate this large amount commodious ore bins have just been completed. A number of minor improvements have been made on the concentrating mill at this point, and, in fact, at all points on the property, all tending to facilitate operations.

Underground the 750-ft. level from the Maid of Erin shaft has been advanced into the Wolftone ground about 80 ft., and is being rapidly driven ahead in order to get under and command the ore body, while the southeast drifts from the 700-ft. level are already in that ground more than 100 ft., and are in ore, top, bottom, and sides. As the ore chute has already been opened in the Mahala, 600 ft. to the south and east, it is without doubt continuous through all of the Maid of Erin territory.

PENROSE.—Progress is rapid at this mine. The pump station above the contact, in the porphyry, is approaching completion. This station is 30 ft. in length, 10 ft. wide and 9 ft. high in the clear. Below this point the shaft has been enlarged to 4½ ft. × 15 ft. in the clear, and will be carried down that size in order to admit of the hanging of five Cameron sinking pumps.

STAR OF HOPE MINING COMPANY.—This company, operating the Bohn shaft, is putting in two additional 80-H. P. boilers. The shaft has attained a depth of about 390 ft. So far the two sinking pumps are amply sufficient to handle the water met with.

OURAY COUNTY.

YANKEE GIRL SILVER MINES, LIMITED.—It is reported that a large body of high grade ore has been struck in the 10th level of the Yankee Girl mine.

PARK COUNTY.

OHIO MINING COMPANY.—This company, which has been operating on the southern slope of Mount Bross, has just closed a deal, whereby it has acquired absolute title to the Altoona group of mines, which lie between the company's property and the Great West mine. The company's property now consists of 12 claims, containing 100 acres in all. The following officers were elected at Denver on the 27th ult.: M. Finnerty, president; Alfred H. Rice, vice-president; Thomas B. Croke, treasurer; W. S. Rice, secretary; James P. O'Brien, manager; John F. Tully, superintendent. The directors have decided to push the development of the property, as originally contemplated, by opening up the large ore bodies which have been exposed by sinking the main shaft. They have also decided to replace the present hoisting plant with a larger and more extensive plant of sufficient power to handle the large cage which they intend to put in the main shaft, which has already passed through 100 ft. of ore. The vein is 10 ft. wide, and is said to assay $35 to $80 a ton in gold, silver and lead.

PITKIN COUNTY.

ASPEN.—This famous mine first came into prominence, says the Aspen *Times*, in 1883, when Mr. J. Hooper and others, under a lease, took out $600,000 during the last 30 days of the lease. After that it was worked for a short time by the owners until the Durant-Aspen apex fight practically stopped all development. Upon the compromise of this suit work was started up again. During the last three and one-half years it has been under the management of Dr. Henry Paul, and in that time 125,293 tons of silver ore have been mined, averaging 48.11 ozs. in silver, making a total output of 6,038,000 ozs. The ore also carried 7% lead, which makes 17,714,500 lbs. of lead. There has been paid for railroad freight $806,000, and for smelting charges $628,000; amount received after deducting railroad and smelting charges, $4,400,000; dividends paid to owners about $3,365,000. There are employed, on an average, 300 men per day. Large ore reserves are blocked out, warranting the assertion that it will pour forth the precious metal for years to come. The ore is conveyed from the mine to the railroad cars by means of a Huston tramway 3,200 ft. in length, an average of 150 tons per day being shipped. Before Dr. Paul became manager it is estimated that the mine produced $1,500,000, making a total production of $7,500,000.

ASPEN MINING AND SMELTING COMPANY.—This company is the owner of twenty-one lode mining claims, situated upon the northerly slope of Aspen Mountain, and embracing about 84 acres of ground, says the Aspen *Times*. Among the claims owned by the company which have been more or less distinguished individually for their products are the Spar, Washington No. 2, Emma, Golconda, Gen. Shields, etc. Thirteen of the claims owned by the company are producing properties, and the balance of the territory has, as yet, been but little developed. About 7⅛ miles of tunnels, levels and other mine workings have been run for the development of the property, and these workings are all connected, the main surface opening being the Veteran tunnel. The lowest level is somewhat over 1,800 ft. below the highest and about 500 ft. lower than the streets of Aspen. The ores are found at or near the contact of beds of blue limestone and brown limestone or dolomite, the latter being the lower stratum. The ore bodies range from one foot to 50 ft. in thickness. The total output of the company's mines since the discovery of ore in 1879, has been between 85,000 and 90,000 tons, which has yielded a gross return of between $4,000,000 and $5,000,000. During the company's current year, ending December 1, the output of the mines will be between 21,000 and 22,000 tons of ore of somewhat lower grade in silver than during past years, but containing a fair average of lead, and yielding a fair profit. About 170 men are employed regularly, under the immediate direction of Frederick M. Coombs, superintendent, and Thos. Quayle and P. W. Swan, foremen.

WELD COUNTY.

UNION COAL COMPANY.—The United States Supreme Court, at Washington, D. C., on the 25th ult., affirmed the judgment of the United States Circuit Court of Colorado in the case of the United States against this company. The land involved is located in Weld County and embraces Sections 4, 8, 10 and 14, in township 1, range 68 west. The lands were entered with Agricultural College scrip of the State of Tennessee, additional payments in money being made by R. R. McCormick and others, who are said to be members of the Denver association. The scrip was presented, the cash payments made, and patents to the land obtained in names of Royal Duff and Paul Linger. The Government ascertained that these persons did not exist, and accordingly sued the Union Coal Company, into whose hands the land had passed, to recover title on the ground. The coal company contended that as the consideration had been tendered and accepted and patents had issued regardless of the fact of the existence or non-existence of the persons named, the Government could not recover. The Supreme Court stood four to four on the issue thus presented, and the decision of the lower court having been in favor of the coal company, that decision stands.

FLORIDA.

MARION COUNTY.

(From our Special Correspondent.)

CORNEY PHOSPHATE COMPANY.—This company has been organized by Mississippi capitalists to operate near Somerfield, with R. S. Buck, Jr., general manager. The daily capacity of its plant will be 75 tons; capital stock, $600,000. Its washing machinery is almost ready to run. It will sun-and-air dry its rock until experiments in drying now being extensively made lead to the adoption of a more economical method.

STANDARD PHOSPHATE AND CHEMICAL COMPANY.—This company has been organized by A. H. Agnew, of Alexandria, Va., who is its president, to operate near Kendrick on the Florida Southern Railroad. The daily capacity of its plant will be 50 tons; capital stock, $50,000. The main office of the company will be at Alexandria and it will ship its phosphate there to be ground for

local use. The company has begun mining, and 25 men are employed in the pits and in building a tram road to connect with the railroad spur.

IDAHO.

OWYHEE COUNTY.

(From our Special Correspondent.)

BANNER GROUP.—It is proposed to install an electrical plant on the Payette River, 3 miles from these mines, to furnish them with power. The long drainage tunnel has already been driven 700 ft. The ore from these mines is exceedingly rich. The 20-stamp mill is kept running night and day with ore from the Wolverine and Crown Point.

SHOSHONE COUNTY.

(From our Special Correspondent.)

ARGENTINE.—Messrs. Davy & Son, of Warden, have purchased this mine for $35,000, from Messrs. J. K. Knott, M. O. Lonsdale and others. It is located near Osborn and the Union Pacific Railroad. The ore is of high grade in silver, carrying lead and copper. Arrangements have been made with a Helena smelter for the reduction of 10,000 tons of ore.

BUNKER HILL & SULLIVAN MINING AND CONCENTRATING COMPANY.—The tramway is again in operation. The new cable has an improved lug that it is claimed will avert the trouble experienced with the old one. Last Saturday's run exceeds all former records for the same length of time. The delivery was 1,200 loads of 800 lbs. each. The company is now shipping its concentrates in sacks instead of loading in bulk from concentrator to the car. It sacks and hauls the concentrates on wagons about one mile to Wardner Junction, and then ships by rail to Helena, Mont.

GETTYSBURG MINING COMPANY.—This company has been incorporated by N. Fred Essig, H. E. Houghton, E. B. Hyde, D. F. Wetzell, Chas. Monteath, and A. M. Murphy. The capital stock is $1,000,000, divided into 1,000,000 shares.

GROUSE.—This mine has a tunnel 8 ft. wide, 8 ft. high and 1,250 ft. long in the ore body, which is of as good grade in silver and lead as any in the Cœur d'Alene. The mine was bought two years ago for $20,000 and is now owned by John Woods, of Minnesota; P. Larson, Helena; A. C. McLean, Mullan, and Messrs. Carson and Jennings, of Osborn. Taken in connection with the Morning and Evening, it is said to surpass the Bunker Hill & Sullivan.

KNICKERBOCKER.—The owners of this mine will run a new tunnel 200 ft. lower than the present workings. The ore is of high grade, assaying up to $1,600 per ton.

STEMWINDER.—The owners of this mine are considering a proposition to increase the capacity of their dressing works.

UNION MINING COMPANY.—The difficulty between the railroads and this company has been adjusted and the Union Pacific railroad will haul its ore. The dressing works will be in operation in a few days.

KANSAS.

CHEROKEE COUNTY.

During the week ending November 28th, the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 2,840,000; rough ore, pounds sold, 1,961,790; zinc ore, pounds sold, 666,973; lead ore, pounds sold, 49,270 Sales aggregated a total value of $7,833.

KENTUCKY.

CUMBERLAND COAL COMPANY.—This company will, it is reported, develop 1,753 acres of coal land in Union and Crittenden counties.

MAINE.

KENNEBEC COUNTY.

PENDLETON.—The owners of this gold mine, in Pittston, have bonded a mill privilege near the mine, and will build a stamp mill this winter. The machinery, which has been ordered in California, will be delivered in March.

MICHIGAN.

COPPER.

During November the Atlantic mine produced 208 tons and the Allouez mine 118 tons of mineral.

Boston exchanges state that Capt. Daniell writes that "the copper ground in the Tamarack Jr., is making towards the Centennial and that the latter's No. 3 shaft will surely reach that rich ground by spring." This is a very positive statement and if its source is correctly attributed, it speaks well for the Centennial's future, inasmuch as Capt. Daniell has proven himself a man "who knows what he is talking about." However, as the openings in the Tamarack Jr., although upon the same lode as is the Centennial, are leading away from and not toward the latter's ground, it is just possible that he has been misquoted.

IRON—GOGEBIC RANGE.

UNITED MINING COMPANY.—This company has been organized with a capital of $300,000, to engage in iron and copper mining in Gogebic County. No cash has been paid in, the property belonging to the company being real property valued at $150,000. The stock is held by F. F. Palmer, 1,100 shares; Jas. B. Book, 1,100; Michael W. O'Brien, 1,100; Waldo M. Johnson, 2,700; Lucius H. Collins, 1,050 Jas. H. Alward, 600; Jas. H. McMillan, 600; Jas. T. Kenna, 600; Wm. B. O'Brien, 810; Geo. H. Russell, 660; Henry Russell, 600; Wm. J. Gray, 300; Clarence Tucker, 600.

IRON—MARQUETTE RANGE.

LAKE SUPERIOR IRON COMPANY.—A special meeting of the shareholders of this company will be held in Boston on the 23d inst. for the purpose of voting upon the question of increasing the stock. It is proposed to use the funds accruing from this increase in the sinking of shafts on Sec. 21, equipping the same with mining machinery and for the further purpose of constructing additional ore carriers for the lakes. It is said to be the intention to add 28,000 shares, which would bring the total up to 100,000. Two years ago the company added 12,000 shares for the purpose of constructing new boats, which have proved very successful. Work on Sec. 21 is now well under way. One shaft has reached a depth of 60 ft. and a second is fairly started. It is thought by Capt. John Trebilcock, who has charge of the new work for the company, that ore will be met with at no great distance from the surface. Fire broke out in the cage shaft near the 440-ft. level of this company's Hematite mine on the morning of the 28th ult. The shaft house was destroyed. All the miners escaped uninjured.

REPUBLIC REDUCTION COMPANY.—This company's property, consisting of a mill and equipment, has been disposed of by foreclosure sale in favor of Dalleba, Corrigan & Co., of Cleveland, O. The property has stood idle during the past season.

IRON—MENOMINEE RANGE.

HAMILTON ORE COMPANY.—The water on this company's No. 2 shaft, to which reference has been made in recent issues of the ENGINEERING AND MINING JOURNAL, has risen to within 80 ft. of the surface. Operations of unwatering the shaft will commence about January 1st, or upon the completion of the new hoisting plant.

IRON—VERMILION RANGE.

ZENITH IRON COMPANY.—This company's mine has reached a depth of 300 ft; marketable ore is being hoisted. The company will continue to produce ore during the winter.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, Nov. 30.

There was a very light output from the lead and zinc mines last week on account of cold weather and the Thanksgiving holiday. The ore buyers were inclined to hold back from making large purchases. Zinc ore still remains at an average price of $22.50 per ton and lead ore at $24 per thousand.

Following are the sales from the different camps as far as reported:

Joplin mines, 1,231,980 lbs. zinc ore and 318,640 lbs. lead; value, $21,491.35.

Webb City mines, 603,510 lbs. zinc ore and 43,470 lbs. lead; value, $7,634.85.

Carterville mines, 1,615,580 lbs. zinc ore and 55,810 lbs. lead; value, $19,918.60.

Zincite mines, 366,680 lbs. zinc ore, and 640 lbs. lead; value, $4,650.

Lehigh mines, 87,340 lbs. zinc ore; value, $1,051.

Carthage mines, 215,000 lbs. zinc ore; value, $2,633.75.

Galena (Kansas) mines, 694,043 lbs. zinc ore and 54,790 lbs. lead; value, $7,633.

Districts, total value, $65,072.55.

Aurora, Lawrence County, mines, 130,000 lbs. zinc ore, 470,000 lbs. silicate, and 407,000 lbs. lead; value, $9,250.

Lead and zinc belts, total value, $74,322.55.

Col. H. H. Gregg, one of the World's Fair Commissioners, is opening up what bids fair to be a large deposit of surface zinc ore on one of his tracts of land in what is known as the Gordon Hollow district, four miles southwest of Joplin. He has named the mine the Scotia, which is now producing from 10 to 15 tons of ore per week.

Burch Center is an old time mining camp that was formerly known as the Scotland district and was a wonderful producer of surface lead and zinc ore. Recent development and improvements have been made and the Missouri Pacific Railroad is preparing to extend its line from Webb City and Carterville to this point, and possibly continue on southeast to Granby. This fact has caused much activity among the old mines, and the old Burch mines have put in new machinery and increased the capacity of their ore dressing plant, so they are now steady producers.

Mr. S. E. Johnson, a mine operator of Aurora, was in Joplin last week and reports our sister camp in a very prosperous condition, with many new tracts of land being prospected, some of which are among the steady producers. The Rustler mine has received an order for 500 tons of zinc blende from Swansea, Wales, 300 tons of which is in the bins ready for sacking and shipment. Mr. Johnson is operating a mine adjoining the Rustler mine and has opened up a large deposit of zinc ore at a depth of 180 ft., in which he is preparing to open a stope. This is the deepest shaft in the Aurora district and proves that large deposits of zinc blende will be found underlying the silicate beds. The Aurora camp has been the most noted producer of silicate in the entire lead and zinc belt. Many of these deposits cropped out at the surface of the ground, but, as a rule, when depth was reached zinc blende was found underlying the silicate beds.

The European zinc smelting companies are becoming fully aroused over the zinc interest of this section. Mr. F. L. Snyder, of Snyder Bros., was informed last week that an agent of the John Lysaght Smelting Company, Limited, of Bristol, England, would arrive in Joplin this week to close a contract for a large shipment of zinc ore This is the result of a trial shipment sent the company some time ago. Mr. O. B. Steen received several letters last week from smelting companies in Germany inquiring more fully as to the supply of zinc ore to be had in this district. The good work of the Land and Zinc Association of Southwest Missouri and Southeast Kansas, through their agent, Mr. Weisse, is beginning to be felt, and with the opening up of the new year we feel confident that European smelters will be in this market for all the ore they can secure. This move will lead to the erection of sampling works, and possibly calcining furnaces in this district.

REX MINING AND SMELTING COMPANY.—This company's land is still the great attraction, and many of the new mines opened up have now put in their wash places and are cleaning up the lead and zinc ore. Last week the sales were 27,440 lbs. zinc ore and 6,640 lbs. lead ore. This production will now increase from week to week.

MINNESOTA.

IRON—MESABI RANGE.

CINCINNATI IRON COMPANY.—This company has filed articles of incorporation. The capital stock is $3,000,000, divided into 120,000 shares. The incorporators are Lewis Pritchard, Frank Woodman and A. E. Humphries, of Charleston, W. Va., John McKinley and James T. Hale, of Duluth. Explorations are at present being carried on in 56-18, near the Biwabik property.

MOUNTAIN IRON COMPANY.—At a meeting of this company's shareholders, held in Duluth recently, the action of its board of directors in reference to the Duluth & Mesabi Railroad, by which it was agreed to turn over a certain amount of company stock to the road, was indorsed. Full power was also given to the directors to facilitate the construction of said road. A meeting of the Biwabik Company's stockholders was held later, and similar action taken.

MONTANA.

RUBY.—This mine, in the Lowland District, has been bonded by a Pittsburg company for $265,000. This property is owned by Chas. Nichols, Jake Graff and Henry Moldenhaeur. It was bonded three years ago to the Anaconda Mining Company at the time of the great excitement in that district. A shaft 300 ft. deep was sunk and a tunnel 1,600 ft. was run on the property, but the Anaconda company had no faith in the future prospects of the mine and relinquished it.

SILVER BOW COUNTY.

BUTTE & BOSTON MINING COMPANY.—Superintendent Palmer of this company, now in Boston, is quoted as saying that the mine is treating about 400 tons daily in its dressing works. Of this 250 tons comes from the Silver Bow mine and 150 tons from the East Grey Rock. Silver Bow shaft No. 1 is now down to the 600-ft. level and drifting west. No. 2 shaft is driving east on the 500-ft. level and growing richer as it goes east. The East Grey Rock has produced some of the finest peacock ore ever seen in Butte. No. 2 is down to the 800-ft. level. Mr. Palmer says the cost of ore after being brought to the surface is from $1.35 to $2.50 per ton, and that the total cost of copper in the matte after smelting if about 5c. per lb. To this cost is to be added refining and freight charges. Mr. Palmer further says that as the mine is opened fully five years ahead it is difficult to determine as yet where construction ends and operation begins. He asserts, however, that while the silver ore is richer above the water level, copper ore is richer below it.

COLORADO MINING AND REDUCTION COMPANY.—This company is installing an electrical pumping plant in one of its mines in Butte.

NEVADA.

ELKO COUNTY.

In an interview in the San Francisco *Report* Mr. P. C. Hyman, president of many of the Tuscarora mining companies, who has made a lengthy visit to the district, said that the Union mill will not be started up for some time to come, as the companies find it more profitable to sack their first-class ores and ship them to Salt Lake, where they sell at the sampling works for cash. The Commonwealth, North Commonwealth, Belle Isle, North Belle Isle and other mines are now shipping ore in this manner.

(From our Special Correspondent.)

BELLE ISLE MINING COMPANY.—The stopes are yielding as usual and the ore is being sacked preparatory to a shipment to the Carlin sampler.

COMMONWEALTH MINING COMPANY.—The south drift from No. 2 raise has been advanced 22 ft., following an ore seam 12 in. wide, which assays $83 per ton.

DEL MONTE MINING COMPANY.—No. 1 raise, third level, has been advanced 21 ft., exposing 18 in. of $60-ore. The south drift from No. 1 raise now shows 12 in. of $30-ore. No. 2 raise has been ex-

tended 5 ft., there being small seams of ore in the top. Good ore continues in the face of the north drift from No. 2 raise, which has been advanced 22 ft. Seventy-eight cars of ore were hoisted last week.

NEVADA QUEEN MINING COMPANY.—The south drift, second level, has been extended 15 ft., the face showing some high grade ore. The south drift, No. 2, now shows a seam of ore assaying $256 per ton.

NORTH BELLE ISLE MINING COMPANY.—The vein in No. 3 north drift, 400 ft. level, is again showing some ore. No. 2 raise has been advanced 13 ft. and stopped, and stoping commenced. The winze has been sunk 12 ft. and will cut the vein this week. The stopes at the north end are yielding as usual, and ore is being sacked for shipment to Carlin.

NORTH COMMONWEALTH MINING COMPANY.--On the second level the winze from the intermediate drift is down 26 ft., exposing high grade ore the entire distance. There was hoisted last week 14 cars of first class ore, averaging about $356 per ton, and 56 cars of second class ore, averaging $30 per ton. There were shipped to the railroads 43 tons of first class ore.

ESMERALDA COUNTY.

(From our Special Correspondent.)

It is proposed to have a 30-stamp mill in operation on the Truckee River within the next three months to work Candelana ores.

LINCOLN COUNTY.

News has been received of a rich strike in Monkey Wrench camp, Highland Range, 30 miles west of Pioche. A ledge has been opened, samples of which are said to run as high as 4,000 ozs. silver per ton.

LYON COUNTY.

MOUNTAIN VIEW.—This gold mine, in Sunrise district, formerly owned by Steve Morris, has been purchased by Messrs. Charles Bray, T. S. Gladding and J. H. Sayre, of San Francisco, Cal. A stamp mill will be erected, and work commenced shortly.

NYE COUNTY.

(From our Special Correspondent.)

Manuel San Pedro, known at one time as a prominent mining man of the state, has instituted suit in the Superior Court of California against J. B. Cooper, of San Francisco, for an accounting of certain properties disposed of by him while in partnership with the plaintiff. In 1878 plaintiff turned all his property, consisting of 21 mines, over to the partnership, the agreement being that on each mine being put on the market the proceeds should be divided equally. For the seven years during which business was done, $1,020,500 was taken out in bullion from the several mines, but San Pedro alleges that of this amount he never received one cent, it being fradulently appropriated by Cooper to his own use. In 1881 the Alexander mine was sold for $572,000, which sum was also made way with by Cooper, who also contrived to lay hands on the sum of $200,000 obtained for the balance of the claims. Furthermore, San Pedro was to have received $300 per month as superintendent, but his salary fell in arrears, the partnership owing him $6,000, also $5,000 for a house sold by him to the firm. He demands judgment for $274,312 with interest and costs of action.

ORANGE COUNTY.

According to the Santa Ana *Blade*, all the old silver locations throughout the county are at present showing up finely, while several new developments promise well for the future. A visit to the mines situated in the Silverado Cañon, and about a mile above the old town site, shows the extensive workings that have been carried on there in the past year.

STOREY COUNTY—COMSTOCK LODE.

SAN FRANCISCO, Nov. 26th.
(From our Special Correspondent.)

The following is the weekly statement of ore extracted from Comstock mines, and milled, with the average assay values:

Mine.	Tons extracted.	Tons milled.	Assay Value. Nov. 21.	Nov. 14.
Belcher.....	146	146	$21.26	.....
Con. Cal. & Va....	1,000	900	22.83	$23.62
Chollar.....	421	421	17.05	17.87
Overman.....	**514	474	17.99	.....
Savage.....	*723	530	18.50	19.00
Yellow Jacket.....	†280	....	....	....
	†700	....	...	....

*Cars. †Silver bearing ore. †Gold bearing ore shipped to Santiago mill. **Car samples averaged $18.31.

ALTA SILVER MINING COMPANY.—There has been an increase of water in the winze, 1,350 level, but not sufficient to cause difficulty. The ore in the winze remains the same, but it is regarded as certain that it extends down to the 1,450 level. The Cornish pumps are to be started soon, after being overhauled, and the water drained from the 1,450 level, after which drifting will be done to intersect the ore.

CROWN POINT INCLINE.—The flow of water though the bulkhead has slightly diminished, but the pumps are still working nearly up to their capacity. In the Belcher incline the surface of the water is now 78 ft. below the floor of the 1,600 station. In the vertical shaft of the Overman the water has been lowered 4 ft. during the last week.

HALE & NORCROSS MINING COMPANY.—The hearing of the case of M. W. Fox vs. the directors of this company before Judge Hebbard is creating much excitement in San Francisco. Much of the testimony elicited has been of a startling character, and has in essential particulars substantiated the allegations made from time to time in the ENGINEERING AND MINING JOURNAL regarding operations on the Comstock Lode.

Upon resuming on Monday Alvinza Hayward and W. S. Hobart were examined regarding what they knew, or as it proved, what they did not know of the operations of the Nevada Mill Company. They each own a two-fifths interest in the corporation, but both professed the most profound ignorance of all the details of the practical working of the mills. Mr. Hayward, upon being pressed by counsel, admitted that he had in his possession $90,000, being an accumulation of profits from tailings, but for whom it was being held or to whom it was to be distributed, and at what time, he professed entire ignorance. He freely confessed, however, that the mill company had never paid any dividends on the capital invested, but this assertion was modified later when he stated that there was in his possession $60,000 undivided profits.

The mass of testimony adduced proved conclusively, what has been repeatedly denied, that the board of directors of the Hale & Norcross Mining Company were the nominees of the mill ring, to which they owed their seats in the board. Between 1887 and 1890, the time during which the frauds are alleged to have taken place, the following directors were elected, the manner of their election being apparent: A. C. Hamilton, owner of one-eighth interest in the Nevada Mill Company and superintendent of Hayward's mines; C. S. Wheeler, attorney-at-law, put on the board by Judge Boalt, Hayward's legal adviser; W. E. Sell and C. T. Bridge, secretaries in Hayward's office and bookkeepers for the Nevada Mill Company; A. K. P. Harmon, director of Hayward's mines for 20 years and his business aid; J. Souther, put in by Hayward; W. C. Watson, brother-in-law of Senator J. P. Jones, put in by A. C. Hamilton, mill-owner; C. P. Egan, put in by Senator Jones; E. B. Holmes and J. B. Low, put in by Messrs. Mackay and Flood; H. M. Levy, identified with the company for many years, no evidence being adduced to show he was put in office at the behest of any one individual, he having the confidence of all the "ring."

All these whilom directors confessed to having little or no interest in the company, and that each and every one had joined the Board at the solicitation of some one. Of the affairs of the company they candidly confessed their ignorance, albeit they attended all the meetings of the directory and drew $5 for every meeting. Henceforward the denials, so freely indulged in hitherto, that directors of mining companies under the present infamous proxy system are mere dummies will scarcely be in order.

Evan Williams, Superintendent of the Nevada and Mexican Mills, and a state senator of Nevada, stated that originally he was a clerk in the Crown Point office, but in 1881 he was engaged by Sam. Jones—brother of the senator—to run the Mexican mine, and was placed at the head of the syndicate mines later. Some of the particulars he gave regarding the process of handling bullion and also the reducing of ore were interesting. The regulations of the Carson Mint do not permit more than 10,000 oz. of bullion being deposited on any one day in the name of one person. Frequently, according to Mr. Williams, bullion was deposited in the name of Giverich & Bryson, saloon keepers at Carson, and more frequently in the names of Peters and Brown, clerks in the Bullion & Exchange Bank, of which institution Mr. Williams is vice-president. All depositing was done by him.

A series of questions finally drew from the witness the fact that the Hale & Norcross mine had no representative at the mill, that the tank shovelers—laborers at $3 per day—took the assays, and that therefore the mine stockholders were unprotected so far as the mill was concerned.

Regarding the three slow-motion pans (the little joker), Mr. Williams spoke briefly, but to the point. "These pans," said he, "are situated in a little building added to the main building after it was built. *The pans are run for the benefit of the mill company*, and hold about a ton and a half to the charge. They work three charges each per day, or an equivalent to 13½ tons. The proceeds are turned over to the mill company. I take the bullion and weigh it. The mill foreman keeps the account, but I don't think he keeps any books. He calls this the tailings bullion. At the Mexican mill we have two slow-motion pans worked on the same principle as at the Nevada—sulphurets and slimes together—and the bullion product is turned over to the owners of the Mexican mill.

Considering that in and out of season the "little joker" has been repudiated as non-existent save in the exuberant fancy of certain individuals, the above statement of Mr. Williams is positively refreshing in its directness. He further testified that no account was kept of the output of the two mills. The foreman had charge of the pans, and sent the bullion to the James assay office at Gold Hill, where it was run into bars and sent to the mint at Carson, the Bullion & Exchange Bank, however, in all cases handling the metal. The cashier of the Bullion Bank is also the chief clerk of the Carson mint, and as the superintendent is frequently absent, is then in full charge.

Mr. Williams refused to state what interest he had in the Bullion Bank, but none the less is it matter of general repute that he is the principal owner. Mr. James, the Gold Hill assayer, is the brother-in-law of Mr. Williams.

Attorney Baggett was curious to know about the working of the three pan annex, and much time was consumed in extracting the required information from the witness. It was learned that a chute led from the main building into the annex, with a little car track on the side in close connection with the side building. From the box in which the rich sediment settled from the run-off slimes, it was an easy matter for any employé to ladle out with a miner's dipper stuff worth $30 a pound into the three pans, conducted as an adjunct to the mill company for its exclusive profit, because presumed to be tailings. The witness, however, maintained that fraud was in no case practiced, but confessed that the slimes had never been assayed, nor did he know their value. He admitted that 93,540 tons of ore were worked since the mills last started up, and further that nearly 11,000 lbs. of bullion were shipped by Wells-Fargo from the Mexican mill consigned to W. S. James at Gold Hill, and that 3,400 lbs. of this, valued at $30 per pound, belonged to the Hale & Norcross Mining Company.

While Mr. Williams seemed scarcely at his ease on the stand, he appeared to suffer most when asked by counsel as to his own financial standing. Counsel for the defense argued laboriously that such evidence should not be admitted, but being overruled the witness reluctantly gave particulars. The contention of plaintiff has been that when Mr. Williams became superintendent of the Mexican Mill in 1881, he was without means, and that on a salary of $300 a month he could not honestly have accumulated the fortune of $1,000,000 with which he is commonly credited.

The witness stated that in March, 1887, he was able to pay his debts. He also enumerated his holdings at present as follows: 750 out of 3,000 shares in the Banning Land and Water Company, which owns 2,000 acres land and a water right located 70 miles east of Los Angeles, in San Diego County, worth $40 per share; 60 shares, or a three-fifths interest, in the Bullion & Exchange Bank at Carson, worth $1,000 per share, or $60,000; a one-sixth interest in a dredging company of 100,000 shares, the value of which he didn't know; 15,000 out of 100,000 shares in a creamery company worth $1 per share; a one third interest in the Washoe Mill and Mining Company, which runs a 10-stamp mill at Gold Hill, of unknown value; 1,000 shares Newtown Mining Company, of Cerro Gordo, Inyo County, a recent incorporation, of prospective value; a contingent interest in the Stoddard copper mine of Idaho, value unknown; one-quarter interest in a ranch of 340 acres near Colfax, value unknown; and 5,000 shares of the Water, Land & Light Company of Reno, worth from $5 to $6 per share. Last, and after some demur, witness conceded that he was owner of an eighth interest in the Nevada Mill and Mining Company, the plant of which Alvinza Hayward had previously testified cost over $300,000. Rather curiously witness failed to recollect how he gained his interest in the mill. All that he remembered was that it was years ago and that he had with others gone into a stock transaction which resulted in his getting his interest in the property.

The witness explained that he never received any profits from the Nevada mill, albeit it was in evidence that $150,000 was being held as profits from the mill for distribution to some party or parties unknown.

A certified copy of the bullion records of the Carson mint during the years 1887-90, showing all bullion deposits made by the Nevada mill for all the Comstock mines for which it milled ores, furnished a pretext yesterday for two hours of long and dreary argument. These records show the nature, character, and value of all bullion deposits, by whom made and for whose benefit. The object of the plaintiff in offering the record in evidence was to lay the foundation for showing that nearly $2,000,000 was deposited in the mint in the names of Peters and Brown, clerks in the Bullion Bank, which deposits were marked in the record as "unknown bullion," and that no record appeared as to where it came from. In some cases bars were deposited as unstamped, while testimony might show that they had been stamped and assayed by W. S. James. The inference was that the unstamped bars were the property of Hale & Norcross Mining Company and not the mill owners.

The defense perceived the importance of the record and argued long and earnestly against its being admitted, but the Court overruled the objections, and on Monday next—to which date the case was adjourned on Wednesday—Mr. Williams will be examined along the line suggested by the mint record.

SAVAGE MINING COMPANY.—There has been shipped 46 tons of ore to the Mexican mill to be worked by the new Janin process. Work has been temporarily discontinued in No. 2 west crosscut, 1,500 level, also in the raise, Sutro Tunnel level. There is now bullion on hand valued at $21,284.

NEW JERSEY.

WARREN COUNTY.

DICKERSON.—Ario Pardee, lessee of this mine, has suspended operations, stating that it can be worked at a profit no longer.

NEW YORK.

ULSTER COUNTY.

George Q. Adams, of Quincy, Ill,, has obtained from S. S. Westbrook, of Kingston, the right to mine for mineral on the latter's property in the town of Esopus, with the option of paying $3,000 for the land if he decides to purchase before April 1st, 1892. Conrad Bwiger, of Esopus, has also agreed to lease his farm in that town to Mr. Adams for twenty-one years at $200 per year, for mining, with the option to purchase at any time for $150,000.

NORTH CAROLINA.

(From our Special Correspondent.)

It is reported that specimens of the nickel ore recently discovered near Ashehille, which were sent to Washington, D. C., for analysis, did not show a sufficient percentage of nickel to render the ore profitable.

PENNSYLVANIA.

COAL.

The transfer is about consummated of 18,000 acres of land at Glen Hazel, which places the vast tract of coal and timber property in control of a company represented by B. E. Cartwright, of Ridgeway. The purchase leaves no doubt but that the Shawmut & Glen Hazel road will be built, as the possessors of Glen Hazel own Shawmut and other territory along the route. It is the intention to operate both on the timber and coal, and to sell the land as fast as the timber is taken off for farms and to colonize a good class of people on the terrirory. The purchase gives the Cartwright interests control of about 15,000 acres of coal and about 22,000 acres of timber.

It is reported that extensive new operations are soon to take place in Washington County. The new works of the Eclipse Coal Company and Jones & Laughlin's will give employment to 1,000 men. The Carnegie companies have options on 2,500 acres of coal lands on Pike Run, which will be opened as soon as a branch of the Pittsburg, Virginia & Charleston road to the place is built. The Ridgeway Coal Company, of Philadelphia, will soon open an immense tract on Miller's Run to be mined by machinery.

The new coal works belonging to Wm. H. Brown's Sons, opposite Monongahela City, was the scene of a fire on the 27th ult. The fire was discovered about 2 o'clock, but it was not until 10 o'clock, eight hours later, that the flames were extinguished. The loss is placed at $16,000. It is fully covered by insurance. The fire communicated with the heavy growth of timber on the hillside and spread rapidly in every direction. The mine has never been worked as yet, having just been opened. James Loutitt is the general manager.

Clearfield Coal Company.—This company is contempleting putting in electric mining machines at its No. 4 drift at Tylers. The company is employing about 100 miners at present, and has 50 coke ovens fired up.

Clinton Coal and Coke Company.—This company is about to open up a 6-ft. vein of coal in Big Beaver Township, Lawrence County. The coal is of excellent quality, and the bed extends over a large area of territory, including a portion of Beaver County. Pittsburg capitalists are interested in the venture.

Elk Coal and Coke Company.—This company has again commenced mining coal and making coke at Caledonia. A reorganization of the company has taken place and a new superintendent has been appointed.

Rochester & Pittsburg Coal and Iron Company.—Plans and specifications are being completed for a coal crusher to be built at the Walston mines, near Punxsutawney, by this company. It will cost about $20,000. It will be built between two tipples, so that the coal from both mines will be dropped into the great hopper. A number of coal bins will also be erected and a coal washer will be built in the near future.

TENNESSEE.

Governor Buchanan, the Board of Prison Inspectors and the lessees of the convicts met in Nashville on the 28th ult. for a consultation concerning the convict question. The meeting was private, but after its close it was stated that the inspectors had passed an order for the return of the convicts who were released from Coal Creek and Briceville to those two places. The order is in general terms, and is similar to the former order made by the Board. It puts no restrictions on the lessees, nor does it fix the time when convicts shall be returned. On the following day Governor Buchanan was reported as saying: "The convicts shall be returned to the mines if it takes every able-bodied man in the State to do it." The return of the convicts will probably be made as soon as the lessees provide suitable quarters, and an ample guard. It is said that the work of constructing the quarters will be commenced at once, and will take about two weeks. The present intention as to the guard is to provide about 50 men each for Briceville and Coal Creek and 100 men for Oliver Springs. All these will be in the pay of the lessees. Twenty-five men at each place will be militia-men deputized to do guard duty. The guard will not be from the existing companies of the State, but will be enlisted for the purpose. About 300 of the 452 released convicts have been recaptured.

A dispatch from Knoxville on the 1st inst. stated that there was more trouble among the miners at Oliver Springs. When the convicts were turned loose from the stockade at that place the Cumberland Coal Company announced that it would employ free labor immediately and every miner white or colored who could be had was put to work. Things moved peaceably until the 27th ult., when the white miners determined to run off the negroes. The houses of the latter were attacked, and the negroes were given notice that if they did not leave within 24 hours all would be killed. A number of the negroes fled in terror. Others more bold called on the president of the company for protection. He secured the names of ten of the leaders of the mob, and took out warrents for their arrest. The men fled to the mountains, though the officers succeeding in capturing two. They postponed their trials, and Saturday the white miners struck because their demand that the warrants against the two men be dismissed was refused. There are now no men at work. The president of the company says that there was more than enough work far both white and colored. He says that the men were kept separate, and that there was no occasion for the attack on the colored miners. It is now probable that convicts will be taken back.

New York & New Orleans Coal and Iron Company.—The *World* publishes the following in its Sunday cable: A prospectus of the Anglo American Coal, Iron and Steel Corporation has been issued in London. The capital asked for is £1,000,000, divided into 3,000 6% first mortgage debenture bonds of £1,200 each, 60,000 8% cumulative preference shares of £5 each, 78,800 ordinary shares of £5 each and 600 founders' shares of £10 each. Half this capital is to be offered immediately for subcription. The objects of the company as stated, are to acquire the property belonging to the New York & New Orleans Coal and Iron Company of Tennessee; also nineteen-twenty-fifths of the capital stock of the Kimball Town Company, of $2,500,000, which was organized to develop the said town site. These properties are said to have a frontage on the Tennessee River of three miles, extending 18 miles back from the river, and to comprise 60,000 acres of land, which, according to the experts employed, contains large deposits of coal and iron. The Manhattan Trust Company, of New York, is the trustee of the company. H. Ingalls Kimball is managing director in America. The advisory board consists of Stephen Elkins, Logan H. Roots, of Little Rock, Ark., R. O. French, President of the Manhattan Trust Company, of New York, E. K. Sibly, and Col. John H. Bryant, of New York.

MONTGOMERY COUNTY.

Gracey-Woodward Iron Company.—This company is to erect a $50,000 ore washer with a daily capacity of about 400 tons at Clarksville.

UTAH.

JUAB COUNTY.

Centennial-Eureka Mining Company.—The annual meeting of this company was held at Salt Lake City on the 25th ult. The following officers were elected: J. F. Woodman, president; J. E. Bamberger, vice-president; W. W. Chisholm, secretary and treasurer; J. F. Woodman, J. E. Bamberger, W. W. Bradley and C. W. Bennett directors. The financial statement showed cash on hand September 1st, 1890, $179,716.94. The ore sales for the nine months from September, 1890, to August, 1891, reached $382,413.68. October, 1890, being the biggest month, $123,592, and August, 1891, the smallest, $9,797.34. The interest on deposits was $2,500; cash from sundry sources, $8,385.91, making total receipts of $574,358.43. During the nine months the dividends have reached the magnificent sum of $330,000: $44,530.40 has been paid for labor, and numerous other expenses were reported. The cash in the hands of the treasurer is $54,688.59. The mine is reported as being in fine condition.

SALT LAKE COUNTY.

Judge Anderson, at Salt Lake City, on the 27th ult., in the case of the Old Jordan Mining and Milling Company vs. the Niagara Mining and Smelting Company, modified the order of injunction heretofore granted so as to allow each party to do certain development work and clean up certain old workings so that witnesses and interested parties may have free access to view the works, etc. All ore taken out is to be stored. Further consideration of the case was postponed until the 30th inst.

SUMMIT COUNTY.

Ontario Mining Company.—The ore body which was struck recently on the 1,500-ft. level of the Ontario, and which when first found averaged about 18 in. in width, has been constantly widening, until last week it extended the whole width of the drift. It is said to be of better grade and richer than any ever before encountered.

VIRGINIA.

AUGUSTA COUNTY.

Virginia Mining and Investment Company.—This company has purchased 1,800 acres of coal land near Cotopaxi, and commenced operations. The daily output of the mines will reach 300 tons.

FAIRFAX COUNTY.

(From our Special Correspondent.)

It is reported that extensive deposits of apatite have been discovered near Fairfax Court House. Specimens sent to Washington for analysis are roported to have shown a high percentage of phosphoric acid.

RICHMOND COUNTY.

This company has opened a promising ore bed about two miles south of Austinville. It will build a tramway to connect with the Norfolk & Western Railroad.

WASHINGTON.

OKANOGAN COUNTY.

(From our Special Correspondent.)

The coming spring will see a custom mill erected and in operation in the Okanogan District. Messrs. Birdsall, of Spokane, and Knowles and Thompson, of Portland, have looked over the ground very carefully, and have decided that a mill can be worked successfully and with profit to the company.

Black Bear, War Eagle and Fairview.—A stock company is being formed by Spokane and Seattle parties to operate these mines on a more extensive scale. Last July a five-stamp mill was erected on the Black Bear and War Eagle from which mines about $20,000 has already been taken. An increase in the stamping capacity will probably be made in the spring, a 10 or 20 stamp being erected. Mr. Sam Silverman, who has thus far superintended the work of erecting and running the mill, still retains his large interest. Articles of incorporation will soon be filed.

Ivanhoe.—It is said on good authority that the owners have been offered $250,000 for this mine, but hold for larger figures.

Mohawk.—The main tunnel on this mine has now run 250 ft. on the ledge, which is 6 ft. wide, and the pay streak has increased from 8 to 18 inches.

Red Jacket and White Face.—These mines have been bonded by Mr. Andrews for $20,000. 25% to be paid by December 1st, and the balance at the end of one year. These claims were discovered by Messrs. Redmond and Hendrick about two months ago, and are located on Cecil Creek. The ledge is 2 ft. wide, and assays of the ore run from $125 to $375 in gold per ton.

SPOKANE COUNTY.

(From our Special Correspondent.)

The Spokane and Great Northern Mining Company has just been incorporated with a capital stock of $2,000,000, divided into 2,000,000 shares. The incorporators are Chester F. Lee, H. M. Hoyt, A. B. Keeler and H. C. Wells.

It has been estimated by Secretary J. R. Reaves, of the Spokane Chamber of Commerce, from reports made from a district covered by a radius of 125 miles around Spokane, that there will be mined for 1891 not less than $10,000,000 worth of gold, silver and lead. About $6,000,000 of this will go to foreign owners of mines and to railroads for freight charges, leaving $4,000,000 to be distributed among the people for the year's product taken out of the ground and sold.

STEVENS COUNTY.

(From our Special Correspondent.)

Summit.—The sale of this group of mines, near Chewelah, by J. N. Squire to Eastern parties has just taken place. It comprises 10 locations, situated on the Spokane & Northern Railroad. The workings have reached a depth of 200 ft. The vein thus far exposed is 4 ft. wide and some 3,000 ft. in length, and the ore assays $50 in silver per ton, 20% lead, and 25% copper.

WEST VIRGINIA.

A new coal company has been organized at Clarksburg, to open the Roaring Creek coal fields, through which runs the largest vein of coal in West Virginia. Henry G. Davis, son of ex-Senator Davis, has been appointed superintendent of the work.

FAYETTE COUNTY.

Mount Carbon Company, Limited.—This company is erecting a coal-crushing plant at Powellton. The capacity will be 400 tons per day. The company is also putting in two bins of 1,000 tons capacity, with the necessary elevators, conveyors, etc.

WOOD COUNTY.

Cedar Grove Mining Company.—This company, operating in the Kanawha Valley, has commenced mining coal from its gas coal seam. A sample carload of the coal was sent to the Charleston gas works last month and found to give excellent results.

WISCONSIN.

IRON—GOGEBIC RANGE.

Iron Belt.—It is said that this mine's entire 1892 product has been sold at a material advance over the ruling prices of this year. The mine will put 100,000 tons or more in stock this winter, as a starter for the 300,000 tons which it is expected will be shipped next season. The exploratory and development work of the past summer has placed the mine in a condition to make a big record. Sinking is now going on in all the shafts, and there are 25,000 or 30,000 tons of ore in sight at the new westerly shaft.

WYOMING.

CARBON COUNTY.

(From our Special Correspondent.)

The Tilton Mining and Development Company recently organized, is not moving along as smoothly as could be desired, there being a hitch in the internal machinery of the concern.

S. W. Downey's stamp mill at Gold Hill is about ready to start up, and will do so as soon as the contractors finish some ore bins and deliver 500 cords of wood for steam purposes. The shaft on the Wyoming which was thought to be in slide rock, is now down 47 ft., and shows ore glittering with gold. The vein is 4 ft. wide, and promises to be a good producer There is much mystery among the uninformed as to the ownership of the property. Although it stands in the name of Col. S. W. Downey, it is not his property, but really belongs to one of the largest mining operators in the United States, who takes that way to test the camp.

FOREIGN MINING NEWS.

CAPE COPPER COMPANY, LIMITED.—This company operating copper mines in Namaqualand, Cape of Good Hope, and the Tilt Cove mines, in Newfoundland, has declared its regular quarterly dividend of 1s. per share. The capital of the company is £600,000 in shares of £2 each. Since the organization of the company, in April, 1888, the following dividends have been paid: June, 1888, 4s.; September, 1888, 4s.; December, 1888, 4s.; March, 1889, 4s.; June, 1889, nil; September, 1889, 1s.; December, 1889, 1s. 6d.; March, 1890, 1s. 6d.; June, 1890, 1s. 6d.; September, 1890, 2s. 6d.; December, 1890, 1s. 6d.; March, 1891, 1s.; June, 1891, nil; September, 1891, 1s. The present company is a reconstruction of the Cape Copper Mining Company, Limited, which paid, prior to April, 1888, £51 18s. 9d. per share, in dividends and bonuses, its capital being £200,000 (20,000 shares).

CANADA.

PROVINCE OF BRITISH COLUMBIA.

NEW VANCOUVER COAL MINING AND LAND COMPANY, LIMITED.—At the half yearly general meeting of this company, held in London on the 17th ult., the chairman of the company stated that the operations of the past half year showed the company was in a fairly prosperous state. The output for that period had amounted to 253,296 tons and the sales to 254,025, against 217,338 tons and 215,000 sales in the previous half year. That was a very large increase; in fact it was the biggest output since the establishment of the company. Everything done augured well for the future of the company. A dividend of 5% was declared.

WELLINGTON.—The strike which was inaugurated at these mines, consisting of the Nanaimo, Wellington, and East Wellington collieries, about 18 months ago, was officially declared off on the 14th ult. A mass meeting was held November 7th, and so strong was the feeling among the members of the Miners' and Laborers' Protective Union that a secret ballot was necessary, which resulted as above stated. Although the strikers have secured reduced working hours, the object for which they struck, namely, the recognition of the union, has not been attained. Messrs. Dunsmuir & Sons, the proprietors of these collieries, possibly allowed the reduction of working hours because they appreciate the fact that Washington coal has wrested from them the supremacy of Pacific Coast markets. Heretofore this company exported from 75% to 80% of its product to the United States. In connection with the above statement, the company has started proceedings in law against Tully Boyce, president of the miners' association, and T. Keith, M. P., on the charge of conspiracy. Both have been committed for trial. At the trial held November 21st both were placed under heavy bonds to appear later before the assizes. The decision of the judge caused quite a sensation.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Dec. 4.

Heavy Chemicals.—Stocks, on the whole, are small. The current demand, as is characteristic of this season of the year, is light, while the transactions in futures for 1892 delivery are of good proportions. There is manifest some uneasiness as to the future of caustic soda, while an attempt has been made to bear the market on bleaching powder by various rumors concerning French makes.

Caustic Soda.—There is a little better tone in the market, although buyers are still suspicious, and are generally refusing to buy ahead. The weak condition of the commodity in England is ascribed as the cause. We quote: 60%, 3·15c., to arrive; 70-74%, 3·05c., spot, and 3·10c., to arrive; 76%, 3·15@3·20c.; 77%, no spot stock; 3c., to arrive.

Carbonated Soda Ash.—Stocks are very light. There is a limited business in both spot and futures. We quote: 48%, 1·60@1 62½c.; 58%, on basis of 48%, old process ashes, 1·55@1·60c.

Alkali.—A very good demand has existed in futures, contracts for several thousand tons being taken for 1892 delivery. Arrivals for the week have been considerable. Prices are firm. We quote: B. M., 48%, 1·57½@1·60c.; high test B. M., 1·47½@1·52½c.

Bleaching Powder.—Heavy sales for 1892 delivery continue, and have already extended into the tens of thousands of tons. The quotation is 2·10@2·15c.; spot transactions are being made in a limited way at 2·20@2 30c. We met with a report in the trade this week that a large amount of the French product had been placed upon the market, that it threatened to demoralize trade, that there was plenty more where it came from, etc. Investigation showed that there has not been a hundred casks of this brand imported since the first of the year, that the present lot is of low test (about 33%) in soft wood casks and not desirable as a purchase. Local brokers do not appear to set very much store by the change which it is alleged will be wrought in the bleach market by the French brands.

Sal Soda.—The foreign stock is very limited at $1.15@$1.20. The domestic brands seem to be capturing most of the trade. They are quoted at $1@$1.05.

Acid.—Certain manufacturers have issued notices of an advance in muriatic. These set forth data published in our report last week. The movement but illustrates the general rising tendency of prices. The demand continues very good. Manufacturers are fighting shy of contracts, and although they must soon close on next year's business, they will be in excellent condition to dictate terms. We quote per 100 pounds in New York: Acetic, $1.60@$2; alum, lump, $1.55@$2; muriatic, 18°, $1.12½@$1.25; 20°, $1.25@$1.37; 22°, $1.50@$1.75; nitric, 40°, $4.50 and upward; 42°, $6.50@$7.50; 66°, sulphuric brimstone, $1½@$1.75; oxalic, $7.25@$7.75.

Blue Vitriol.—The market is quiet but firm at 3½@4½c. Very little stock is being manufactured.

Brimstone.—There is absolutely no available spot stock and very fancy prices are being offered for small lots. There is a good demand for seconds for December shipment, for which $30 is asked; thirds, owing to a much lighter demand, are quoted at $1.50 less, or $28.50.

Fertilizers.—A good seasonable demand continues at about the same range of prices. Stocks in almost all commodities are light, while inquiries for 1892 business are quite numerous.

The ammoniates continue light in stock and good demand. We quote for delivery in New York: Sulphate 3·05@3·07½c. for spot, and 3·10@3·15c. for December; bone sulphate 3c.; dried blood, $2.05 per unit; azotine, $2.05; tankage, $19@$21 per ton; bone meal, $22@$23; acidulated fish scrap, $12.50; dried scrap, $23.50. Owing to the limited production the two last mentioned commodities have been absorbed by local consumption.

Double Manure Salts.—There is no change in the situation, which is very firm. We quote the syndicate price of 1·10@1·12c. for 48%. For 90%@95%, basis 90%, foreign invoice, weights and tests, 2·07½@2·10c. Lots under 50 tons are proportionately higher.

Kainit.—Prices are very firm at $9@$9.50.

Muriate of Potash.—The arrivals for the week aggregated 750 tons. There were no deliveries. Inquiries for next year's prices are numerous. The new schedule of prices is expected within a very short time.

Nitrate of Soda.—The market is very strong at 2·10@2·15c. for spot, with 2 05c. for this year's shipment, and 1.95c. for January, February and March shipment. There is a good business doing.

The *World* of the 29th ult. prints a cable dispatch to the effect that there is at present a great demand in European countries for refined nitrate.

Messrs. Mortimer & Wisner, nitrate brokers of this city, furnish the following interesting statistics, issued under date of Dec. 1, 1891:

	1891. Bags.	1890. Bags.	1889. Bags.
Imported into Atlantic ports from West Coast, S. A., Jan. 1—Dec. 1. 1891.	603,102	623,753	466,497
Imported into Atlantic ports from Europe. Jan 1 —Dec 1 1891.....	18.802	.....	.....
	621,904	623,753	466 497
Stock in store and afloat Dec. 1, 1891, in New York.....	59,349	14.656	35,581
in Boston.....	900	.....	.....
in Philadelphia....	.....	.....	.....
in Baltimore.....	.....	4,000	1,800
To arrive, actually sailed..	142,000	169,500	.....
Additional charters.....	250,000	310,000	323,700
Total supply, when shipped.....	452,249	498,156	316,081
Visible supply to Mar. 1, 1892	202,249	188,156	.....
Stock on hand Jan. 1.....	36,454	22.009	84,043
Deliveries past month.....	34,359	46,170	29,074
Deliveries since JAN. 1 to date.....	398.109	627.106	513,159
Total yearly deliveries....	.....	673,679	522,021
Prices current Dec. 1.....	2·10—1·77½@1·80—1·92½@1·95		

Phosphates.—The South Carolina rock continues quiet at the unchanged price of $6.50@$7.50, wet and dry respectively, f. o. b. vessels.

NOTES OF THE WEEK.

The Susquehanna Chemical Company's acid factory, situated near Starrucca, Pa., burned on the 1st inst. Loss, $20.000; insurance, $6,000.

Liverpool. NOV. 25.

(Special Correspondence of Joseph P. Brunner & Co.

The only change to report in heavy chemicals is the reduction in the prices for caustic soda. A new company in opposition to the Alkali Union has been promoted in the West of Scotland for the purpose of making caustic soda and bleaching powder.

Soda ash continues steady, and not much offering. The minimum spot quotations are as follows, all net cash: Caustic ash, 48%, £5 6s. 3d. per ton; 57@58%, £6 7s. 6d. per ton; carb ash, 48%, £5 9s. 9d.; 58%, £6 12s. 9d. per ton; ammonia ash, 58%, £6 7s. 6d. per ton. For special brands a considerable premium on above quotations has to be paid for certain makes.

Soda crystals continue in request and strong at £3 1?s. 6d.@£3 15s. per ton, less 5%.

Caustic soda is flat and price has been reduced; the nominal quotations now for any position is as follows, all net cash: 60%, £9 2s. 6d. per ton; 70%, £10 5s. per ton; 74%, £11 5s. 6d. per ton; 76%, £12 10s. upward. For lots of under 10 tons, 5s. per ton extra is charged. For large contracts over 1892 it is quite possible that the above quotations might be shaded.

Bleaching powder in hardwood casks is steady at £7 15s. per ton, net cash, for all quarters except United States and Canada.

Chlorate of potash is firm but less active at 5½d. per lb., less 5%.

Bicarb. soda is in fair demand at £6 15s.@£7 per ton, less 5% for 1-cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia is somewhat lower. The nearest spot values are £10 10s. for good grey 24%, and £10 15s. per ton for 25%, both in double bags, f. o. b. here.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Birmingham, Ala., Pittsburg, St. Louis, London, and Paris, see pages 656 and 658].

NEW YORK, Friday Evening, Dec. 4.

During the week under review the market for mining stocks has been dull and featureless, so far as the actual trading is concerned. The decline in the price of the Comstocks is apparently without reason, but the San Francisco operators may be able to explain it later on. It is barely possible that the lawsuit instituted against the Hale & Norcross by M. W. Fox and others may have something to do with the decline. A full report of the proceedings will be found in our mining news columns.

The number of shares sold this week was 20,855, of which 11,965 were dividend shares and 8,890 non-dividend. Last week the total number of shares sold was 24,640, of which 18,465 were dividend shares and 6,175 non-dividend. This shows a decline of 5,785 shares this week. It is to be especially noted that the trading in the dividend paying stocks was greater than that in the non-dividends.

There were sales of 300 shares of Alta at 90c.@$1. Trading in Best & Belcher amounted to 625 shares at $2.25@$2.50. Chollar was quiet at $1.50. Of Comstock Tunnel stock 3,900 shares changed hands at 15@17c. Julia was neglected at 18c. Exchequer shows sales of 400 shares at 75c. Mexican declined from $2.40 to $1.90, with sales of 600 shares. Union Consolidated also shows a decline, the price having dropped from $1.95 to $1.15, under sales of 215 shares.

Utah appeared in some demand, 1,000 shares being sold at 65@75c.; Consolidated California & Virginia opened at $4.50 and dropped to $3.80; Crown Point was quiet at $1.10@$1.25, as was also Hale & Norcross at $1.50; Gould & Curry showed sales of 350 shares at $1.25@$1.40; Savage was moderately dealt in and underwent a decline of 30c., closing at $1.30; Sierra Nevada had a solitary sale of 25 shares at $1.75, and Yellow Jacket 300 shares at $1.50@$1.65.

Of the Tuscaroras, Belle Isle appeared in some demand, 1,400 shares having been sold at 40@45c.; North Belle Isle shows a solitary sale of 100 shares at 35c.

The long absent copper stocks have returned to the market this week. Of Allouez 100 shares were sold at $2 and of Boston & Montana 30 shares at $39.13.

Of the California stocks there were sales of 1,100 shares of Bodie Consolidated at 60@75c.; Bulwer shows a solitary transaction of 100 shares at 50c.; Plymouth was in some request during the week and 400 shares changed hands at $2.25@$2.50. The financial statement of this company is published in our mining news columns this week and is not as satisfactory as many stockholders expected. Of Emmett 500 shares were sold at 35c.

Of Phœnix of Arizona 800 shares were sold at 40@42c. A special meeting of the stockholders of the Silver King Mining Company will be held at the office of the company, 310 Pine street, Rooms 15 and 17, San Francisco, Cal., on December 10th, 1891, at 1 o'clock, P. M., for the purpose of taking into consideration the advisability of selling, distributing among the stockholders, or otherwise disposing of the shares of the capital stock of the company now owned by and in the treasury of the company, and taking such action as may be necessary to carry out the wishes of the stockholders in reference thereto, and for the transaction of such other busi-

ness as may come before the meeting. Transfer books will close on Saturday, December 5th, 1891, at 12 o'clock noon.

The trading in Horn Silver and the attendant advance in the price of the stock are perhaps the only interesting feature of this week's mining market. There were 2,580 shares sold at $3 85@ $4, which is higher than the stock has been for some time.

Alice shows a sale of 200 shares at $1.35.

Of the Colorado stocks Leadville Consolidated was as usual the most popular; 2,800 shares were sold at 10@13c. Little Chief had a single sale of 500 shares at 27c.; Robinson Consolidated was quiet, only 200 shares being sold at 46c.

El Cristo was neglected this week. There was a sale of 50 shares at 41c.

Boston.

Dec. 3, 1891.

(From our Special Correspondent.)

The market for copper stocks during the past week was very weak in the early dealings, and a good deal of long stock was thrown upon the market which carried prices to the lowest point for the year. At this writing it looks as if liquidation had ceased, and the better quotations for ingot copper in London has imparted a more cheerful feeling among operators, and there are indications of a better market for the balance of the year.

Calumet & Hecla is the strongest stock on the list, and sold at $260, while the lowest point touched was $257, only a fraction below last week's closing. On the other hand, Tamarack was forced for sale on a weak market, resulting in a decline of $5 to $150.

The Montana group of stocks were quite active, a good deal of Boston & Montana being offered for sale, and the price was forced down to $36⅜; in the reaction which followed an advance to $39 is noted.

Butte & Boston was also depressed to $13¾, but recovered to day to $15¼.

Osceola was sold down to $26, quite a lot of it coming out at that price. The better feeling to-day has carried it up to $28⅜, a small lot selling at $29.

Centennial touched $11⅞ on the depression, but has rallied well to-day, selling up to $13½.

Kearsarge sold at $11, recovering to $12¼.

Franklin holds its own well at $15@$15⅛, only going off to $14¾ on the raid.

Atlantic is quiet at about $11, although it sold at $10¾ early in the week.

Allouez declined to $1⅞, with very little doing in it.

Santa Fe sold at 30c. and Ridge at 75c.

The product of the Quincy Mining Company for the month of November was 600⅛ tons, against 570½ tons in October. The stock of the Quincy is in demand at $100 per share, but there is none offered under $110. We hear of no sales this week.

Tamarack, Jr., is quoted on the street at about $60.

The advance in the copper shares to-day is the result of a little better reported demand for ingot and to higher quotations for the metal abroad.

The members of the Stock Exchange have been amusing themselves to-day in betting on the price of ingot copper, one enthusiastic bear offering to wager that Lake copper would sell at 10½c. within 60 days.

Silver stocks continue under a cloud, and transactions are exceedingly limited. Napa Quicksilver sold at 8 4½. On the street we hear of a few sales of Catalpa at 21c. Breece is offered at 35c. and Dunkin at 45c.

3 P. M.—The market closed firm with sales of Boston & Montana at $39; Butte & Boston, $15½; Centeninal. $13¾, and Kearsarge, $12. Tamarack advanced to $158, with later sales at $155.

BOSTON, Dec. 4. (*By telegraph.*)—The closing quotations were as follows: Calumet & Hecla, $260; Tamarack, $155. bid; Boston & Montana, $39; Kearsarge, $12; Butte & Boston, $15⅝; Centennial, $13½; Osceola, $29; Franklin, $14½, bid; Atlantic, $11 bid.

San Francisco.

Nov. 27.

(From our Special Correspondent.)

Early in the present week the Mining Stock Association forwarded a communication to the San Francisco Stock and Bond Exchange drawing attention to a very curious fact elicited during the trial of the suit of M. W. Fox vs. the Hale & Norcross Mining Company. Several brokers testified while on the witness stand that large blocks of stocks had been transferred without any payment of the certificate tax. In such cases the privilege was granted by the more than kind courtesy of the secretary of the mining company. The great advantage gained by these favored brokers through the unjustifiable action of such secretaries may readily be understood. By such means it is within their power to put blocks of stock in the names of their respective firms for election purposes, and also secure to themselves the business of those persons who control the company elections for the benefit of the Comstock Mill Ring. So far the Stock Exchange, either through its officers or as a body, has not seen fit to take official cognizance of the communication.

The current week, from a combination of causes, has been dull, and the trading done of little importance. The Thanksgiving holiday has caused things to lag, and in addition the news from the mines, particularly the South End group, has revealed nothing calculated to stimulate prices or cause buyers to enter the market.

The North End stocks have ruled a trifle lower than a week ago, the sales being light. Consolidated California & Virginia sold to-day for $4.85; Ophir, $3.30; Mexican, $2.25, and Union Consolidated, $1.95.

Of the middle Comstocks, Hale & Norcross has remained steady throughout the week at $1.40, but this price has been independent of market fluctuations and is apparently the result of inside support during the present legal complications. Potosi at $1.95, Savage at $1.40, Best & Belcher at $2.30, and Chollar at $1.40 showed trifling declines save in the case of Chollar, which ruled at $1 a week ago.

The Gold Hill and South End stocks have continued to be the ones most in demand, but even with them sales have been light. A rather curious thing occurred at the delinquent sale of Consolidated New York this week. Only 200 shares, out of over 11,000 shares advertised, were sold for delinquency, the balance having been paid in within the last few days. What this may bode is hard to say, but it is certain that holders of the stock have more faith in it than the working at the mine warrants. Alta, that sold so strongly last week, has shaded off since, and was quoted to day at 85c. sharing, however, with Consolidated New York the largest recorded sales. In the morning session transactions amounted to 1,150 shares of the former and 1,400 of the latter, which sold for 60c. Belcher sold for $1.65, a 10c. advance on the week's trading: Bullion for $1.50; Confidence, $3; Justice, 55 c.; Kentuck, 30c;; Overman, $1.60, a 15c. advance during the week, and Yellow Jacket, $1.55.

The only outside stocks in which business has been done have been the Tuscaroras. The reports from the mines continue to be very encouraging, though whether any of the bullion will ever reach the shareholders is altogether a different proposition. Meantime Del Monte is ruling at 30c.; North Belle Isle, 35c.; North Commonwealth, 40c., and Nevada Queen, 20c.

SAN FRANCISCO, Dec. 4. (*By telegraph.*)—Quotations to-day do not show much change. Following are the asking prices: Best & Belcher, $1.95; Bodie, 60c.; Belle Isle, 35c.; Buiwer, 40c.; Chollar, $1.15; Consolidated California & Virginia, $3.95; Eureka Consolidated, $2.50; Gould & Curry, $1.15; Hale & Norcross $1.20; Mexican, $1.85; Mono, 40c; North Bell Isle, 35c.; Navajo, 15c.; Ophir, $2.70; Savage, $1.25; Sierra Nevada, $1.90 Union Consolidated, $1.65; Yellow Jacket, $1.25;

St. Louis.

Dec. 2.

(From our Special Correspondent.)

Mining matters were less active this week and prices fell considerably, making the closing quotations, with few exceptions, a good deal below those of a week ago. Trading was carried on chiefly in small lots, and this combined with the closing of the exchange on the 26th ult. made the totals a good deal smaller than usual.

Little Albert has succeeded in raising enough to pay off its debt for the present and the mine will be started up at once.

Central Silver opened at 27½c. and closed at 22½c. During the week the stock sold at 31c., 35c., 18c., and then rose to 26¼c. at the close. Sales amounted to 17,600 shares. The market appears to be fairly steady with a good demand.

Elizabeth opened at $1 and fell to 85c on a sale of 4,500 shares; later 5,300 shares sold at 92½@97½c. On Saturday 1,400 shares sold at 90c., on Monday 1,000 shares sold at 91½c.@95c., and on Tuesday the stock sold at 92½@96¼c., closing to-day at 92½c.

Little Albert sold very steady throughout the week and held its opening figure of 4c., while sales were made at 4½c., 5c. and 5½c. Sales amounted to 8,400 shares.

Mickey Breen is slightly stronger to-day than a week ago and closes at 4½c. The market opened at 3½c., sold as high as 5c. and closes at 4½c. Sales amounted to 5,600 shares.

Silver Age was the stock to give a surprise to the brokers; from an opening of 7c. it has risen steadily to 12c. The stock is in strong demand, and gives every prospect of going higher. Sales were made of 2,000 shares at 7@9c, 7,500 shares at 9½@15c, 2,700 shares at 13½@15c, and 300 shares at 14@14½c., the market closing strong at 12c.

Granite Mountain had a little trading this week, 50 shares being sold. The market appeared weak on opening and soon dropped from $19.50 to $19; it closes at $18.50. Twenty-five shares sold at $19.75 and 25 at $19.

Bi-metallic was in demand, but the views of sellers and buyers were too far apart to permit of any trading. The stock opened at $33.75 and closes at $33.50.

Eight hundred shares of Montrose sold at 15@ 16¼c., the market closing at 14½c.

Yuma fell off 12½c. this week and from an opening of 32½c., and is now quoted at 20c. Sales amounted to 300 shares at 32½@30c.

American & Nettie was very strong; from an opening of 88c., it closes at 90c., with one sale of 100 shares at 92½c., as a result of the week's business.

Adams fell from $1.90 to $1.85.

Denver.

Prices and sales for the week ending November 28th, 1891:

Company.	Opening.	H.	L.	Closing Bid.	Sales.
Mines.					
Alleghany	67	....	....	08	....
mity	02¾	†01	03	03	29,700
Bangkok-C.-B	05½	06½	05¼	05½	2,500
Bates Hunter	65a	60	60	70a	500
Brownlow	....	*11	07½	*10¾	13,100
Calliope	11	....	....	13½	.....
Cash	....	....	....	....	.....
Clay County	....	....	....	*122	.....
Gettysburg	27½	30	30	28	200
Gold Rock	65	73	65	*70	2,600
Leavenworth	05	06¼	06	06	200
Little Rule	100a	91	91	98a	100
Lexington	30	*24	32½	33½	12,900
May-Mazeppa	90	100	90	92	1,200
Matchless	200	....	....	....	.....
Oro	75	....	....	75	.....
Pay Rock	02	02¼	02	02	1,300
Puzzler	03	03	02½	03	1,100
Paul Gold	....	*15½	15	*15½	14,300
Reed National	60	60	60	....	100
Rialto	110a	....	....	110a	.....
Running Lode	....	22	22	20	300
Whale	07½	06	06	05	100
Bal. Smuggler	60a	....	....	50	.....
Sutton	15	15¼	15¼	15	500
Prospects.					
Argonaut	....	....	....	20	.....
Big Indian	15a	....	....	15a	.....
Big Six	10a	08	07½	07½	200
Claudia J	06	06¼	05½	05¾	2,600
Century	40a	30	30	35a	300
Diamond B	03¾	04	03½	*03¾	6,900
Nat. G. & Oil Co	*14	*14¾	12½	12½	18,500
Emmons	45½a	*48	45½	*48	13,900
Golden Treasure	91a	†92	80	77	2,700
Ironclad	18½	*21	18¾	*20	9,400
John Jay	01	....	....	....	.....
Justice	†27	†31	25	28	27,000
Morning Glim	....	....	....	....	.....
Park Consolidated	06	....	....	05¼	.....
Potosi	02	02¼	02¼	02¼	100
Total					161,600

* Buyer 30. † Buyer 60. ‡ Seller 60. § Seller 30. a Asked. b Bid.

Lake Superior Iron, Gold and Silver Stocks.

(Special Report by A. M. Helmer, Milwaukee, Wis.)

Iron.	
GOGEBIC RANGE:	
Anvil	$3.00
Ashland	52.50
Aurora	10.75
Bessemer Consolidated Bonds	20⅝
Brotherton	2.50
Cary	....
Colby	....
Father Hennepin	....
Germania	7.00
Gogebic Iron Syndicate	.25
Iron Belt	2.00
Metropolitan Land and Iron Co.	65.00
Montreal	10.50
North Pabst	2.00
Northern Chief	25.00
Odanah	13.50
Pabst	....
Palm	1.75
Pence	1.25
Penokee and Gogebic Developm. Co.	....
Ruby	.....
Ryan	.35
Section 33	9.00
Windsor	....
Wisconsin Iron and Steel Co	.50
MARQUETTE RANGE:	
American	$2.00
Cambria	12.50
Champion	80.00
Cleveland	15.50
Cleveland Cliff Iron Co	....
East New York	2.00
Humboldt	....
Iron Cliffs	....
Jackson	105.00
Lake Superior	65.00
Michigamme	....
Milwaukee Iron Co.	$4.50
Negaunee	....
Pittsburg and Lake Angeline	145.00
Republic	27.50
Riverside	2.00
MENOMINEE RANGE:	
Aragon	....
Chapin	....
Commonwealth	10.00
Florence	....
Hamilton Ore Co	....
Lincoln	1.75
Mansfield	....
Mastodon	....
Monitor	....
Norway	....
Paint River	....
Pewabic	....
Quinnesec	....
Sheldon and Shafer	....
Sheridan	4.00
Vulcan	....
Youngstown	....
VERMILION RANGE:	
Chandler	4.00
Chicago and Minnesota Ore Co	105.00
Clingstone	.20
Inter-Ocean	.20
Minnesota Ore Co.	83.00
Northwestern	.20
Pioneer	....
Vermilion	20
Vermilion P. & L. Co	2.25
Gold and Silver.	
Badger Silver Mining Co.	2.00
Michigan Gold Co.	.25
Peninsula Gold Mining Co	....
Ropes Gold and Silver Co.	1.25

PIPE LINE CERTIFICATES.

(Specially reported by Watson & Gibson.)

During the early part of the week there was a material reduction in the output of the McDonald field in Pennsylvania, and on Thursday the price of Ohio oil in the field was advanced 2¼ cents per barrel to 35 cents, and a little activity was noted in the market for the Ohio product on the Exchanges. It sold as high as 15 cents, which with the 20 cents to be paid to the Pipe Line Company prior to delivery of the oil to the holder of the certificate, would make the same rate as that prevailing in the field. Speculation in both kinds of petroleum remains perfectly stagnant.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales
Nov. 28	57⅜	57⅞	57⅜	57⅜	11,000
30	58	58	58	58	181,000
Dec. 1	59½	60	59½	60	82,000
2	60¼	60⅞	60¼	60¼	37,000
3	60⅝	60⅝	60¼	60⅜	10,000
4	59¾	59⅞	59	59⅛	68,000
Total sales in barrels					389,000

MEETINGS.

Silver King Mining Company at the office of the company, No. 310 Pine street, San Francisco, Cal., December 10th, at 1 o'clock P. M.

DIVIDENDS.

Maryland Coal Company, semi annual dividend, 1¼ per cent., payable at the office of the company, 35 Broadway, New York, January 4th, 1892. Transfer books will close at 3 P. M. December 17th, 1891, and reopen at 10 A. M., January 5th, 1892.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of sale.	Am't. per share.
Alpha, Con., Nev....	7	Nov. 4	Dec. 9	Dec. 29	.25
Atlas, S. Dak	....	Oct. 22	Nov. 30	Dec. 22	.01
Best & Belcher, Nev..... ...	59	Nov. 6	Dec. 11	Dec. 31	.25
Bodie Con., Cal.....	13	Sept. 22	Nov. 5	Dec. 9	.25
Bluebird, S. Dak ..	7	Oct. 17	Nov. 19	Dec. 9	.01¼
Buchanan Gold, Cal.	16	Oct. 7	Nov. 11	Dec. 7	.10
Bulwer Con., Cal..	7	Oct. 28	Dec 4	Dec. 31	.15
Challar, Nev	..	Oct. 26	Nov. 30	Dec. 22	.50
Confidence, Nev....	19	Nov. 17	Dec. 22	Jan. 11	.75
Con. Imperial, Nev.	32	Nov. 2	Dec. 8	Dec. 29	.05
East Best & Bel Nev.	2	Oct. 22	Nov. 24	Dec. 12	.20
Eureka Drift, Cal .	4	Oct. 26	Nov. 30	Dec. 21	.02
Fall River Con., Cal.	6	Oct. 20	Nov. 26	Dec. 21	.02
Goodenough, S Dak.	6	Oct. 22	Nov. 23	Dec. 9	.02
Head Centre, Ariz..	3	Nov. 12	Dec. 18	Jan. 11	.05
Hailstorm, S. Dak..	4	Oct. 24	Nov. 25	Dec. 10	.02
Hale & Norcross, Nev	99	Oct. 16	Nov. 24	Dec. 15	2.50
Kingman, Ariz.....	1	Sept. 30	Nov. 12	Dec. 1	.05
Mammoth No. 2, Utah.....	1	Sept. 25	Nov. 10	Dec. 10	.005
Monarch, S. Dak....	10	Oct. 26	Nov. 28	Dec 19	02
New La Platte, S. Dak.....	....	Oct. 27	Dec. 4	Dec. 23	.25
Morgan, Cal	15	Nov. 20	Dec. 28	Jan. 20	.10
Occidental, Nev ...	8	Oct. 19	Nov. 23	Dec. 16	.01
Peer, Ariz	11	Nov. 5	Dec. 8	Dec. 28	.05
Silver Hill, Nev.....	29	Nov. 12	Dec. 15	Jan. 5	.10
Seabury, Calkias, Con., S. Dak	14	Oct. 31	Dec. 5	Dec 22	.00¾
Savage, Nev.....	77	Nov. 5	Dec. 8	Dec. 28	.50
Sez. B.& Mides, Nev.	9	Oct. 29	Dec 1	Dec. 21	.25
Utah, Cons.....	13	Oct. 16	Nov. 24	Dec. 14	.25

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Dec. 4

STATEMENT of shipments of anthracite coal (approximated) for the week ending November 28th, 1891, compared with corresponding periods of last year:

Regions.	Nov. 28, 1891.	Nov. 29, 1890.	Difference.
Wyoming Region, Tons	451,062	414,110	Inc. 36,952
Lehigh Region "	127,660	137,366	Dec. 9,706
Schuylkill Region "	323,085	256,842	Inc. 66 243
Total ..... Tons	901,807	808,318	Inc. 93,489
Total for year to date Tons	36,629,771	32,7 9,967	Inc. 3,839,804

PRODUCTION OF BITUMINOUS COAL for week ending November 2 th, and year from January 1st.

EASTERN AND NORTHERN SHIPMENTS.

	1891. Week.	1891. Year.	1890. Year.
Phila. & Erie R. R....	2,146	148,575	123,301
Cumberland, Md.	81,614	3,739,895	3,095,197
Barclay, Pa.	5,671	176,171	140,858
Broad Top, Pa.....	11.680	462.779	465,379
Clearfield, Pa.....	79,214	3,630,332	3,406,437
Allegheny, Pa....	15.307	1,123,490	1,151,418
Beech Creek, Pa.....	45.271	2,172,688	1,677.818
Pocahontas Flat Top	44.893	2,389 579	1,720,168
Kanawha, W. Va.	50,599	2,184,380	1.876,117
Total	340.395	15,777,919	13,656.9 3

WESTERN SHIPMENTS.

	1891. Week.	1891. Year.	1890. Year.
Pittsburg, Pa	25,069	1,142,780	762,138
Westmoreland, Pa	37,594	1,772,521	1,0?7,092
Monongahela, Pa..... ..	12,678	541,995	497,175
Total	75,341	3,457,?93	2,316,405
Grand total....	415,736	19.235 215	15,973,398

PRODUCTION OF COKE on line of Pennsylvania R. R. for the year ending November 28th, 1891, and year from January 1st, in tons of 2,000 lbs.: Week, 117.972 tons; year, 3,968,703 tons; to corresponding date in 1890, 4 883, 637 tons.

Anthracite.

The output for the week ending the 28th ult. was 901,807 tons, an increase over the corresponding period in 1890 of 93,489 tons. For the four weeks of the month the output was 3,896,963 tons. To this should be added the production of Monday, the 30 ult., which will not swell the total to a figure over the limit of 4,000,000 tons set by the sales agents.

The trade of to-day is in anything but a satisfactory condition, while the future is not especially promising. It is believed that the companies will make an attempt this month to restrict production to the limit prescribed, viz., 3,250,000 tons, although the divers published statements that they will do so are decidedly premature, since the month has hardly been ushered in. A policy of this nature will be only manifest as market conditions develop.

The cold weather of the past week does not seem to have exerted a benign influence upon the trade, expectations to the contrary notwithstanding. The closing of lake navigation made available a certain amount of tonnage which must be disposed of Some of it without doubt is pressing the Eastern market. The line and Western all rail trade continues very good, and owing to the better prices which rule is much more sought after than the tide-water business. A student of the situation needs no further comment upon the market than the mere statement that while the October circular is in existence the companies openly acknowledge that the September circular rules, and that even this is radically cut by independent operators. Ruling prices are about as follows, f. o. b. gross: Broken, $3.65; egg, $4; stove, $4.25; chestnut, $3.75.

The demand for this season of the year is very light, and dealers who of necessity are driven into the market show a decided lack of confidence in the stability of the future by buying in small lots only.

Bituminous.

A satisfactory volume of business continues. There have been no material changes in market conditions during the week. Extrordinary efforts are being made by certain shippers to reach shoal water points, which are likely to be closed by cold weather.

The car supply is much better than was anticipated for the first week in December. We learn that a certain large producer has placed an order for 200 cars for his individual use. Under the surface there is manifest a determined effort to improve the shipping facilities at Baltimore, with a view of securing better service This will assume tangible shape early in the year. Ocean freight rates are firm and seem to possess a rising tendency; vessels are scarce. To Boston from Philadelphia $100@$105 is quoted: to Sound ports 85@95c. The same rates rule from Baltimore.

NOTES OF THE WEEK.

The Schuylkill Canal will be kept open as long as the weather will permit

The five collieries drawn to determine wages in the Schuylkill region give the average price of coal sold in November as 2.33^{3}_{10}$ against 2.30^{7}_{10}$ in October and $2 29$^{3}_{10}$ in November last year.

Notices have not yet been issued of the closing of navigation on the Lehigh & Delaware Division Canal, but the shippers have been hurrying all their coal forward to tidewater as rapidly as possible in anticipation of their closing at an early date.

The Morris Canal Company has notified coal shippers that they must take all risks of coal boats carrying their cargoes freezing in the canal. Navigation on the canal will be continued until December 10th, if weather permits. No consignments have been received for points on the Hackensack River since November 25th.

The Ontario & Western Railroad's coal business for the five months ending November 30th shows an increase of 111% over the corresponding period last year. There was a total of 340,025 tons for the last five months of 1891, compared with 160,526 last year. The past 11 months of the current year showed a record of 635,683 tons.

The statements of the Philadelphia & Reading Railroad and of the Philadelphia & Reading Coal and Iron Company for October makes a very good showing. The surplus earnings of the former were $544,124, and of the latter $174,350, making a total of $718,474, an increase of $206,534 over the same month last year. The surplus for the year to date has increased $1,133,640, making the sum applicable to the payment of interest on the preference bonds $1,814,852, with the month of November, presumably one of the most profitable of the year, yet to be heard from.

Buffalo. Dec 3.

(From our Special Correspondent.)

Cold weather has brought in to our dealers many orders for coal, and trade is quite brisk generally, curtailed, however, by the limited supply of cars for nearby and western points. Prices of anthracite are unchanged; bituminous is nominally without any variation, but dealers are very firm in their views of the first quality article, which is scarce.

The Lehigh Valley Railroad Company has ordered 500 box cars and intend placing a contract for 2,000 gondolas in a few days.

Vessels continue to arrive quite freely at this port and a few have left daily. The weather was cold and boisterous, but moderated on Wednesday. The jam of vessels in our rivers and harbor is less dense, but great difficulty is experienced in handling crafts to and from the elevators and coal chutes. Navigation is still open at the Sault Ste. Marie, but may close at any hour.

The Erie canal will be kept open until all the boats have passed, or until December 8th, at midnight.

The quantity of coal shipped by lake westward from Buffalo, from November 26th to December 2d, both days inclusive, was 77,200 net tons, distributed about as follows: 44,100 to Chicago, 18,050 to Milwaukee, 6,100 to Duluth, 150 to Detroit, 300 to Bay City, 1,500 to Superior, 1,000 to Port Huron and 1,500 to Racine. The going rates of freight were 75c. to Chicago and Milwaukee, 10c. to Duluth. A load or two was sent to Chicago and Milwaukee at $1, and to Racine at $1.25.

Canal movement of coal for the fourth week of November: Receipts, none; shipments, 1,216 net tons.

Railroad receipts and shipments of coal at this port are not reported. No receipts of coal by lake this season. Shipments by lake westward for the month of November, 353,330 net tons, as compared with 356,040 tons in 1890 and 255,280 tons in 1889; for season to December 1st, 2,396,380 net tons, as compared with 2,146,910 tons in 1890 and 2,156,670 tons in 1889. The receipts by canal for month of November were *nil*. as compared with 9,812 tons in 1890 and 9,571 tons in 1889; the shipments for November, 5,317 net tons, as compared with 9,798 tons in 1890, and 1,679 tons in 1889. Total receipts by canal this season to December 1st, 817 net tons, as compared with 41,264 tons in 1890, and 85,055 tons in 1889; total shipments to December 1st, 34,058 tons, as compared with 25,782 tons in 1890, and 11,872 tons in 1889. The aggregate shipments by lake this season to December 1st, as compared with 1890, show an increase of 249,470 net tons, and with 1889 of 239,710 net tons. The rates of freight hence to lake ports during November were 60@75c. to Chicago and Milwaukee, 25@10c. to Duluth and Lake Superior ports, and 2?@20c. to Detroit and Toledo. The rate to Chicago December 1st, 1890, was $1 per net ton, and in 1889 75c. per net ton.

The shipments of coal by lake from Buffalo thus far this season to December 1st were distributed about as follows:

Buffalo to	Net tons.	Buffalo to	Net tons.
Chicago	944,810	Port Burwell	50
Milwaukee	566,785	Ludington	1 117
Pequaming.....	100	Port Dalhousie...	166
Put-in-Bay.....	250	Bay Mil s.....	1 93?
Kelly Island.....	510	Hancock.....	3,085
Serpent River.....	420	Fort Willi m	21,720
Perry Sound	150	Traverse City.	350
Lake Linden.....	3,780	Toledo	66 187
Owen Sound.....	1,000	Duluth	253,280
Sandusky	200	Kincardine.....	900
Port Arthur	2,680	Escanaba	4,330
Manitowoc	4,250	Menominee.....	7,570
Romney...	4	Port Rowan.	89
Gladstone	3? 270	Amherstburgh ...	1,030
Sheboygan..... ...	16,680	Green Bay...	27,720
Houghton	4,320	Saginaw	22 515
St. Clair	800	Port Colborne.	240
Superior.	161,200	Depere.....	1,210
Racine	37,910	Detroit	23,420
Kenosha.....	8,610	Alpena	1,430
Cheboygan	1,350	Washburn.....	6,090
Windsor	2,196	Marinette...	1,510
Portage.....	2,350	Marquette.....	18,240
Mackinaw	150	Huron, O	300
Marine City.....	1,010	Manistique.....	60
Port Huron.....	2,700	Sundry places by vessels from Tonawonda not reported at custom house at this p r	103,022
Ashland	11 650		
Bay City....	11 160		
Tawas.....	240		
Oscoda.....	240		
Sault Ste Marie .	3,230		

Boston. Dec. 3.

The anthracite coal market is in good healthy shape, although the demand is rather small. Buyers generally have good stocks, and there is not much prospect that they will come into the market very soon. Business for the next month will depend largely on the thermometer. Prices here are about as firm as noted a week ago. The easing in New York freights is offset by the strengthening in Baltimore rates. The supply of stove coal on the market is very fair. Egg is easier to secure. Broken and chestnut are in liberal supply. We quote freight rates: From New York, 65@70c.; from Philadelphia, 90c.@$1.05; from Baltimore, $1@$1.10.

There seems to be more activity in the bituminous than in the anthracite market, as dealers in the former are regularly shipping coal to mills with which they have contracts. Outside of this, however, they are doing comparatively little. As it is, coal continues to come forward slowly. The railroad companies controlling traffic north of Boston are still delinquent in delivering, and car rates are firm from $3 93@$3.95.

The retail dealers had a bonanza the first two days of this week, when the thermometer dropped below the freezing point, but the market is as quiet now as if nothing had happened. Those who are in the habit of laying in their supply of coal for the winter have already purchased, and not much activity is looked for from that class of trade for quite a while. There is another class, however, that rushes into the market for small supplies whenever the weather gets the least bit cold. Retail prices are unchanged. We quote prices as recommended by the Coal Exchange of this city: Free burning stove, $5.50; nut, $5.50; egg, $5.25; furnace, $5.25; Franklin, $7; Lehigh furnace, $6; Lehigh egg, $6; Cumberland at wharf, $3.75; screenings, $2.

The receipts of coal at this port for the week ending November 28th were 56,858 tons of anthracite and 6,365 tons of bituminous, against 31,367 tons of anthracite and 10,703 tons of bituminous for the corresponding week last year. The total receipts thus far this year have been 1,817,580 tons of anthracite and 1,015,167 tons of bituminous, against

1,586,194 tons of anthracite and 998,942 tons of bituminous for the same time last year.

The Philadelphia & Reading Coal and Iron Company has removed its Boston offices from the Mason Building to the American Bell Telephone Building, 125 Milk street.

The Gay & Parker Company, coal dealer, has removed from the corner of Kilby street and Exchange place to the American Bell Telephone Building, 125 Milk street.

Chicago. Dec. 3.

(From our Special Correspondent.)

Anthracite coal, stimulated by the recent cold snap, has been in slightly better demand and, though really nothing to brag about, it was an improvement on the late dullness. The change to warmer weather will surely cause the demand to drop off again. The last month in the year—December—is, historically, a bad one in the coal trade and there are at present no indications that this present month will prove any exception. Consumers as a rule buy enough to tide them over until January, and, consequently the purchases of city and country dealers are lighter than ordinary. Of course it is quite understood that this would be varied and probably all changed around by the advent of extremely cold weather. For the time of the year, vessel coal is coming in quite freely at the charter rate, 75c., but the recent disastrous storms on the lake have caused some trouble, and several boats have been bumped on the rocks, cargoes jettisoned or partly so, and one heavy shipper informs us that he has been compelled to charter several more boats to replace those which have been compelled to run to other ports. He further added that the Western market was amply supplied, and that continued large all-rail shipments hither, as contemplated by some companies, would probably result in loss by demurrage or by being thrown on the market. Even now all-rail hard coal in round lots can be bought at large concessions from $5 per net ton. Retail coal is unchanged at $5.75@$6.

The present situation in the bituminous coal market is rather serious. Manufacturers, packing houses, hotels, large apartment houses and some of the railroads are running from hand to mouth, and but few of them have a day's supply ahead. There is plenty of coal in transit, but it is not here yet, and a bad wreck on one of the terminal roads here has delayed the arrival of several hundred cars which are badly needed. A representative lumber man told a shipper to-day that he had three boats which had been delayed four days for want of fuel and he was still waiting for supplies, so that his vessels could make their final trips for the season. Hocking Valley coal is selling, where quick delivery can be made, as high as $3.75 on track. Illinois coal, which is usually quoted at $1.60@$1.80, now fetches $2.25@$2.40, and anything in the shape of coal is quickly picked up at almost any price a seller chooses to ask, if immediate delivery can be had. The situation in Indiana is unchanged; some of the bituminous coal miners have returned to work, but the Brazil block diggers are still out. The sentiment of the public and the press is entirely in favor of the operators, as the men have violated the contract which was made at a mass meeting last April. Some of the more prominent of the men are exerting all their influence to get their fellow-workmen to declare the strike off. Hopes are now entertained that they will succeed, as many men are in favor of going to work as per contract. The operators remain very firm and have the entire sympathy and support of outsiders.

Coke is in fair demand only, but there is nothing of interest to note. Prices are unchanged at the following rates: Lehigh lump, $6.75; large egg, $5; small egg, range and chestnut, $5. Retail prices per ton are: Large egg, $5.75; small egg, range and chestnut, $5.75.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, $3.35; Hocking Valley, $3.25; Youghiogheny, $3.25; Illinois block, $2.10@$2.25.

Pittsburg. Dec. 3

(From our Special Correspondent.)

Coal.—The coal fleets that left here last week have reached Cincinnati and Louisville. At the latter port tows will be made up for the Southern ports. The large boats will proceed south, while the medium and small sized boats are on their way back with empties. The amount sent out to Cincinnati was 4,061,000 bushels; Louisville, 8,518,000; total, 12,579,000. The empties on arrival will be sent to the pools to be loaded and ready for the next rise. Owing to the strike in the spring the yearly shipments will fall several million bushels below those of last year. The river miners are well satisfied, and are busily employed at 3½ cents for mining, and are making good wages.

Railroad coal operators report no change from the previous week.

Coke.—The market was reasonably active, the shipments being 136 cars greater than in the previous week. Of the 18,000 ovens in the region, 12,678 are in operation and 5,322 idle. The shipments were as follows: To Pittsburg, 1,850; to points west of Pittsburg, 3,896; points east of Pittsburg, 1,367; total, 7,113. The car supply continues fair, the Lake Erie and Pennsylvania roads furnishing their full quota. The Baltimore & Ohio, as usual, was short. The production for the week shows over 2,100 tons increase. The H. C. Frick Coal and Coke Company made good time, this being the principal cause of the increased production. The Southwest works and the McClure works ran five days. The Rainey works ran six days, and so did the Cockran. Prices remain unchanged, being the same as those established at the first of the present year.

METAL MARKET.

NEW YORK, Friday Evening, Dec. 4, 1891.

Prices of Silver Per Ounce Troy.

Nov.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Dec.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
28	4.83½	43 7/8	.....	2	4 83¾	43½	94¼
30	4.83½	43 7/8	.....	3	4.83¾	44¼	95½
Dec 1	4.83½	43½	.....	4	4.83¾	44¼*	95½

* Nominal

The market was quiet until Wednesday, when speculators took the cue from Mr. Goschen's speech that England would soon be in the market for free purchases of silver. On reflection they realized that the proposition was only tentative and not likely to lead to an immediate accumulation of a silver reserve, so the price became nominal to-day and is likely to react.

Silver Bullion Certificates.

	Price. H.	L.	Sales.
Nov. 28	94¾	....	10,000
Nov. 30	94¾	....	10,000
Dec. 1	94½	....	10,000
Dec. 2	96	94½	527,000
Dec. 3	96⅛	95⅝	205,000
Dec. 4	95⅝	94¾	170,000
Total sales			932,000

Coinage at the Mints of the United States.

The following statement shows the coinage executed at the mints of the United States during November, 1891:

Denomination.	Pieces.	Value.
Double eagles	78,480	$1,569,600
Eagles	8,320	83,200
Half eagles	14,280	71,400
Quarter eagles	7,440	18,600
Total gold	108,520	$1,742,800
Standard dollars	1,413,756	1,413,756
Quarter dollars	1,232,000	308,000
Dimes	1,240,000	124,000
Total silver	3,885,756	$1,845,756
Five cents	552,000	27,600
One cent	6,310,000	63,100
Total minor	6,862,000	90,700
Total coinage	10,856,276	$3,679,256

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked.
Trade dollars	$ .74	$ .76
Mexican dollars	.73¾	.74¾
Peruvian soles and Chilian pesos	.71½	.72½
English silver	4.75	4.85
Five francs	.93	.95
Victoria sovereigns	4.84	4.86
Twenty francs	3.84	3.88
Twenty marks	4.74	4.76
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.78	4.83
Mexican doubloons	15.50	15.70
Mexican 20 pesos	19 50	19.60
Ten guilders	3.96	4.00
Fine silver bars	.95	.95½

Copper.—On the 2d inst. the sale of the works of the *Société des Metaux* took place, and were definitely sold to the *Credit Industriel* for the sum of 18,000,050 francs. It is understood that the principal creditors of the old *Société des Metaux* instructed the *Credit Industriél* to make the above bid. The news was well received in London, and when it was learned that statistics showed a decrease for the second half of November of 2 200 tons, the market quickly advanced, heavy covering taking place, as also some speculative buying, but the main business was done in G. M. B. copper, and consumer's copper was practically neglected, buyers still being rather cautious. Closing prices for G. M. B.'s are £46 7s. 6d. cash, and £47 three months, while for manufactured sorts the figures are: English Tough, £48 10s.@£49; Best Selected, £50@£50 10s.; Strong Sheets, £60@£10 10s.; India Sheets, £56@£56 10s.; Yellow Metal Sheets, 5½d.

In our market, no excitement has been noticeable; Lake was freely offered all the week at 11c., but very few sales could be made thereat. Yesterday there was a somewhat firmer tone, and different transactions took place at that figure and now 11⅛@11¼c. is asked. The Calumet & Hecla Company is still out of the market, and has now been so for almost three months, and is evidently accumulating stock. Casting copper continues to be scarce but nevertheless prices have declined somewhat, and we have to quote 10⅝@10¾c. Arizona copper is held rather stiffly, but no business has been reported. Large contracts were made in England last week for Montana matte at the low figure of 8s. 9d., which even then was below the parity of G. M. B's.

The exports of copper from the port of New York during the past week were as follows:

To Liverpool—	Copper Matte.	Lbs	
S. S. Bothnia	1,200 bags.	125,669	$8,500
To Havre—	Copper.	Lbs.	
S. S. Creighton	1,537 bars.	475,966	$55,100
" La Gascogne	122 pigs.	40,616	4,600

Tin.—Tin is rather neglected, and prices are a little easier. Sales have been made at 19.95@20.05c., but, on the whole, business has been unimportant.

Abroad the market opened at £91 for spot and £92 for futures, and closes at 2s. 6d.@5s. up for spot, and 12s. 6d.@15s. higher for futures.

Lead.—Lead rules rather firmer but there is no life. A few hundred tons have changed hands at 4¼c., at which figure further quantities are obtainable. Some of the smelting companies in the West have lately been accumulating stocks in anticipation of better prices, but buyers do not show themselves at all anxious to purchase ahead of their wants.

In London English lead is quoted at £12 and Spanish at £11 15s.

Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "The market is quiet and dull. Sales for the week aggregate some 200 tons at 4·10c. There is very little lead offering from any source. Consumers show great apathy and decline to purchase at present."

St. Louis Lead Market.—The St. John Wahl Commission Company telegraphs us as follows: "Lead is very dull and has rather a downward tendency again. Asking price is 4·10c. and 4·05c. is bid. Retail sales are at 4·07½c."

Spelter.—Spelter is still very flat and we have to quote 4·80@4·85c. Smelters have been rather free sellers, and production is going on at a rather heavy rate.

Abroad specials are quoted at £22 12s. 6d. and ordinaries at £22 10s.

Antimony.—Antimony is firm with only a little metal offered. Cookson's is quoted at 16½c., L. X. 15¼c. and Hallett's 12¾@13c.

Quicksilver.—Quicksilver is unchanged at £8 London, $45.50 New York and $47.50 San Francisco.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Dec. 4.

The usual absence of new features characterizes the iron market this week. For months past the trading has been of the same nature, and the anticipations held by some that a large increase in the consumption would be brought about by the general prosperity of the country have not been realized. The good crop returns have not as yet begun to counteract the business depression which has been experienced by the various branches of the trade. In marked contrast to previous years has been the hand to mouth buying of iron by consumers. The market seems to have settled in this rut. The tendency is more especially manifest just at this time, owing to the general clean-up and "stock taking" always prevalent at the close of a year.

American Pig Iron.—Certain brands of Southern iron continue to press for sale. We quote prices as follows: Northern, No. 1 X, $17@$18; No. 2 X, $16@$16.50; Southern, No. 1 X, $16.50@$17.50; No. 2 X, $15.50@$16.50.

Steel Rails.—Divers published reports to the effect that orders for over 200,000 tons of steel rails have been placed during the past two weeks are evidently intended to impose upon the credulity of the public. The facts in the case are these: Certain small orders for rails have been placed, and with said orders has been given an option for a considerable tonnage for delivery over 1892. This stipulates that the present price, $30 at the mills, will be the maximum, while the purchaser is to have the benefit of any reduction which may be made. A meeting of the members of the combination is to be held this week.

Rail Fastenings.—There is nothing new to note. Prices are unchanged as follows: Fish and angle plates, 1·75@1·80c.; spikes, 2·10@2·15c.; bolts and square nuts, 2·75@2·80c.; hexagonal nuts, 2·80@2·85c.

Spiegeleisen and Ferro manganese.—The market is generally demoralized owing to offerings at low figures. We continue to quote 20% spiegeleisen, at $27.50@$28, although it is known that for the little business doing a much less figure has been taken. The price of ferro-manganese abroad is reported to be higher. If this be so it is not reflected in this country. The demand is so exceedingly high that it is difficult to determine an exact quotation; $61.50, tide-water, probably rules for 80%.

Merchant Steel.—A fair volume of business is reported. There seems to be a disposition on the part of consumers to negotiate for 1892 contracts. However, as yet, very few orders have been placed. We quote: R. Mushet's special, 48c.; English, tool,

15c., net; American tool steel, 7@8c.; special grades, 13@20c.; crucible machinery steel, 4·75c.; crucible spring, 3·75c.; open hearth machinery, 2·25c.; open hearth spring, 2·50c.; tire steel, 2.25c.; toe calks, 2·25@2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

Tubes and Pipe.—It is reported that prices are being cut to secure business. We quote the syndicate's discounts: Butt, black, 57½%; butt, galvanized, 47%; lap, black, 67½%; lap, galvanized, 55%; boiler tubes, under 3 in. and over 6 in., 55%; 3 in. to 6 in., 60%.

Structural Material.—There has been a fair amount of business doing. We continue to quote universal plates, $2.20; bridge plates, $2.10; beams, $3.10.

Old Material.—There is nothing doing in old rails, which are nominally quoted at $21@$21.50. Scrap manifests a little activity at $19.

Chicago. Dec. 3.

(From our Special Correspondent.)

There is very little, if any, change to note in the condition of the iron market; probably the dullness is a trifle more conspicuous on account of the holiday taking so many out of the city from Wednesday until Monday of this week. There is quite a diversity of opinion as to when a revival of business will begin; some do not look for any change until February or March; others think it will come earlier. In the meanwhile pig iron is very dull, and values of Southern brands exhibit further weakness; Northern coke iron is weak, but much less so than the former. Demand is now limited to actual requirements as manufacturing consumers do not care to stock up so close to inventory time. Finished material of all kinds is moving very slowly, the exceptions being bars, sheets and structural steel, demand for which is fair, the season considered. The outlook for the future is considered excellent, and especially applies to the railroad situation; increased earnings will undoubtedly give an impetus in this direction. This it has already done, so far as new steel rails and track supplies are concerned.

Pig Iron.—There is only a fair demand for car loads upward to 50 or 200 tons for Northern coke iron; a 500-ton order would be considered a large one now. Sales are only for consumptive requirements, but there is some inquiries in the market for deliveries commencing early in the year. Already a fair tonnage has been sold for 1892. Inasmuch as makers of Northern coke iron look for a stiffening in prices next year, they do not feel justified in loading up their furnaces with low priced contracts for long scattered delivery next year. Lake Superior charcoal continues quiet, though some car wheel makers are feeling the market. Small sales from 50 to 100 tons are made at our quotations. Southern makers of iron are pressing the market, and some extraordinary low bids have been made by consumers—$13.75 for No. 2 foundry, Chicago delivery; furnace will possibly not accept. Prices are very easy, but unchanged.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $17@$17.50; Lake Superior coke, No. 1, $15.25@$15.75; No. 2, $15@$15.25; No. 3, $14@$14.50; Lake Superior Bessemer, $17; Lake Superior Scotch, $17@$17.50; American Scotch, $17.75@$18.25; Southern coke, Foundry No. 1, $15.50; No. 2, $15; No. 3, $14.50; Southern coke, soft, No. 1, $15.50; No. 2. $14.50; Ohio silveries, No. 1, $18; No. 2, $17; Ohio strong softeners, No. 1, $18; No. 2, $17; Tennessee charcoal, No. 1, $18; No. 2, $17.50; Southern standard car wheel, $20@$21.

Structural Iron and Steel.—There is still some demand for material for this season, and the inquiry for next year is growing larger. Predictions point to considerable activity in the spring. The discussions relative to limiting the height of buildings is becoming interesting. Quotations for car lots f.o.b. Chicago are as follows: Angles, $2@$2.10; tees, $2.40@$2.50; universal plates, $2.15@$2.25; sheared plates, $2.20@$2.30; beams and channels, $3.20.

Plates.—Several fair-sized orders have been taken by local agents at points east of here. Warehouse and mill business are both quiet and tubes are weak and irregular. Steel sheets, 10 to 14, $2.40@$2.50; iron sheets, 10 to 14, $2.50@$2.60; tank iron or steel, $2.10@$2.15; shell iron or steel, $3@$3.25; firebox steel, $4.25@$5.50; flange steel, $2.75@$3.25; boiler rivets, $4.25; boiler tubes, 2¾ in. and smaller, 55%; 3 to 6 in., 60%; 7 in. and upward, 55%.

Merchant Steel.—Some large contracts were placed during the week for merchant steels, for delivery during coming year, which aggregate a large tonnage. These had been postponed and are from consumers who usually place their orders earlier in the season. Tool steel is in fair demand only. We quote $6.75@$7 and upward; tire steel, $2.30@$2.50; toe calk, $2.50@$2.65; Bessemer machinery, $2.20@$2.30; Bessemer bars, $2@$2.10; open hearth machinery, $2.60@$2.75; open hearth spring, $2.75@ $3; crucible spring, $3.75@$4.

Steel Rails.—The local mills have booked a large tonnage for next year's delivery, and the rail market is more active than it has been for several weeks The outlook shows a large number of orders yet to be placed. Eastern mills continue to sell carloads in this market at $33. Prices are steady at $31.50@$33 according to quantity. Splice and angle bars are in good demand; one contract calls for 2,250 tons. Regular quotations are $1.95@$2 for steel and $1.80@$1.85 for iron; spike at $2.15@$2.25 per 100 lbs.; track bolts, hexagonal nuts, $2 70.

Galvanized Sheet Iron.—The situation is rather peculiar. Stocks are badly broken, mills behind in their shipments and demand as active as ever, but prices do not improve. Discounts are unchanged at 67½% off on Juniata and 67½% and 5% off on charcoal in large lots. Smaller quantities are quoted at 65% and 10% from list.

Black Sheet Iron.—There is an improved demand for mill lots of the lighter gauges, the cold weather having caused a heavy draught on dealers' stocks. Mill quotations are 2·90c. Chicago for No. 27 common. Jobbers' price is 3·10c. from store and demand good.

Bar Iron.—Demand for car iron has improved, owing to the number of orders for cars recently placed; other than this there is little new business offering. Mill quotations are 1·70c. Chicago. Jobbers' prices are 1·80@1·90c. from stock, and business fair only.

Nails.—There is a fair amount of inquiry for steel cut nails for early delivery next year, and the mill quotation of $1.70, Chicago, is steady. Jobbing price is $1.75 from stock. Wire nails are quiet at $1.85, Chicago, mill lots. Large dealers quote $1.95@$2 from stock.

Scrap.—As one heavy dealer tersely remarked, "the less said about it the better." Prices are nominally unchanged. Dealers quote: No. 1 railroad, $18.50; No. 1 forge, $18; No. 1 mill, $13.50; fish plates, $22.50; axles, $22; horseshoes, $18.50; pipes and flues, $11; cast borings, $7.50; wrought turnings, $9.50; axle turnings, $12.50; machinery castings, $12; stove plates, $7.50; mixed steel, $10.50; coil steel, $14.50; leaf steel, $15; tires, $15.50.

Old Material.—There is absolutely no demand, and holders of iron rails are not forcing the market. Opinions vary as to value, but $21.50@$21.75 is a fair quotation. Steel rails are a drug at $13.50 @$15.50, and car loads of old wheels have changed hands at $16@$16.50.

Louisville. Nov. 28.

(Special Report by HALL BROTHERS & CO.)

The pig iron sales for the past week have been mainly in small quantities; some few transactions in lots of 500 and 600 tons have been recorded. General buying is light, but this is usually the case at this time of year, when the trade is narrowing down its supply of stocks of all kinds, preparing to start upon the new year's business with light supplies and few contracts. The matter of car supply is still a serious question, and deliveries of iron on contracts have been considerably affected. There is more iron being offered now, both coke and charcoal, and during the past week lower figures have been quoted by some of the large producers. We quote:

Hot Blast Foundry Irons.—Southern coke, No. 1, $14.25@$14.50; No. 2, $13.50@$14; No. 3, $13@ $13.25; Southern charcoal, No. 1, $16@$17; No. 2, $15.50@$16; Missouri charcoal, No. 1, $17@$17.50; No. 2, $16.50@$17.

Forge Irons.—Neutral coke, $12.50@$12.75; cold short, $12.25@$12.50; mottled, $11.75@$12.

Car Wheel and Malleable Irons.—Southern, standard brands, $19@$19.50; Southern, other brands, $17@$18; Lake Superior, $20@$21.

Philadelphia. Dec. 4.

(From our Special Correspondent.)

Pig Iron.—Another week of considerable uneasiness in certain quarters of the iron trade has passed without much movement of iron. The whole situation rests on a firm confidence that an immense amount of iron will be bought in the near future to cover incoming requirements. Good brands can be had at $18, $16.50 and $14.50 respectively for No. 1, No. 2 and forge. Buyers are waiting, and there will not be anything like a general rush for iron until after January 1st, even if then. Considerable charcoal iron has been quoted to buyers, also a few large lots of Bessemer.

Foreign Material.—Large transactions are looked for.

Steel Slabs and Billets.—Depressed prices prevail and large orders are expected daily as a result. Manufacturers are shading prices to capture business and consumers are on this account less concerned about mid-winter supplies.

Muck Bars.—Despite the repeated statements of dull business the mills are not turning out less iron and are getting from $26@$27 for their product.

Merchant Iron.—The distribution of car building orders in Pennsylvania and Western shops during the past few days has given an impetus to merchant iron, but prices have not changed. A good deal of new business is coming soon. Mill owners are all waiting for business. Prices range as usual from $1.60@$1.75.

Skelp.—Dull at $1.70.

Pipe.—No change in discounts, though shadings continue.

Sheet Iron.—Demand is slacking up until after the holidays.

Plate and Tank.—Less business is reported this week, but mills have a fair volume on hand. Tank, 1·90c.; shell, 2·30c.; flange, 3·20c.

Structural Material.—Certain large buyers have not succeeded in buying material abroad. There is not enough in it when everything is considered. Angles, 1·95c.; tees, 2·50c.; beams, 3 10c.

Steel Rails.—The N. & W. R. R. Co. placed an order on Tuesday for 15,000 tons on a basis of $30 at mill, one-half going to Pennsylvania Steel Company, and the other half to the Edgar Thompson Works. A great deal of business is under consideration.

Old Rails.—Old rails are quiet at $22.

Scrap.—Railroad scrap is active at $21.

Pittsburg. Dec. 3.

(From our Special Correspondent.)

Business since our last report has not been on a very extensive scale, although many consumers who required material to keep their works running have been purchasing limited amounts sufficient to tide them over the present month, so as to be free for the new year, when a new set of books will be opened. In regard to prices there is very little change to note; in fact, none is looked for until after the new year has been inaugurated. The fall trade has failed to meet the expections that were indulged in, as many expected a "boom" which, up to the present, failed to put in an appearance. The present hope for the future is that the least expected sometimes happens. The stock of standard brands has been well sold up. Some producers are holding their stocks above present quoted prices, considering the raw material better to them than the money offered. On the other hand, there are sellers who will accept present rates for round lots, provided the time of delivery is satisfactorily arranged. Pittsburg to-day is the dullest market East or West; prices are comparatively lower all around.

Carnegie & Co. say, concerning the market: "The demand for steel rails is good; in fact, the best for many years. For a long time the general business condition of the country has been depressed, but there is nothing to complain of now, and there is every reason to believe that the improvement will continue, not alone for this fall or winter, but that the time ahead will be full of prosperity. Indeed, there is no reason to doubt from existing indications, that while this year will continue good, next year will be much better."

The active demand for steel rails is certain to be followed by an active demand for most descriptions of iron and steel, and there is a prospect that the year of 1892 will show the largest business of any year in the history of the American iron and steel trade.

Coke Smelted Lake and Native Ore.

4,000 Tons	Bessemer, Jan., Feb.	15.00 cash
3,500 Tons	Bessemer, Jan., Feb., March	15.00 cash.
2,500 Tons	Grey Forge, March, April	13.50 cash.
2,000 Tons	Bessemer, Jan., Feb.	15.00 cash
2,000 Tons	Grey Forge, Dec.	13.50 cash.
1,500 Tons	Bessemer, spot	14.85 cash.
1,200 Tons	Grey Forge, Dec., Jan	13.40 cash.
1,000 Tons	Grey Forge, Jan., Feb	13.50 cash.
1,000 Tons	Grey Forge, Dec., Jan	13.50 cash.
1,000 Tons	Grey Forge, Dec., Jan	13.60 cash.
500 Tons	Mill Iron, Youngstown del	13.75 cash.
500 Tons	No. 1 Foundry,	15.50 cash.
500 Tons	Grey Forge	13.40 cash.
500 Tons	Grey Forge, Dec., Jan	13.60 cash.
500 Tons	Bessemer	15.30 cash.
400 Tons	No. 2 Foundry	14.50 cash.
300 Tons	No. 3 Foundry, all ore	15.25 4m.
360 Tons	White Iron, Southern	13.00 4m.
300 Tons	No. 2 Foundry, Southern	13.50 cash.
200 Tons	No. 1 Foundry, all ore	16.50 cash.
200 Tons	No. 2 Foundry, all ore	16.00 4m.
150 Tons	Mill Iron, Southern	13.25 cash.
100 Tons	Silvery	16.50 cash.

Charcoal.

125 Tons	Cold Blast	26.75 cash.
100 Tons	No. 2 Foundry	20.50 cash.
75 Tons	Southern Cold Blast	25.75 cash.
50 Tons	No. 2 Foundry	20.50 cash.
25 Tons	Cold Blast	26.75 cash.

Ferro-Manganese.

150 Tons	80%, seaboard	61.40 cash.
85 Tons	80%, delivered, Pittsburg	64.40 cash
75 Tons	80% Pittsburg	65.00 cash.

Bloom, Beam, Rail, and C Ends.

1,250 Tons	Bloom and Rail Ends	16.50 cash.
1,000 Tons	Bloom Ends	17.25 cash.
500 Tons	Bloom Ends	18.00 cash.
500 Tons	Bloom Ends	17.25 cash.

Old Iron and Steel Rails.

1,000 Tons	Long Steel Rails	17.25 cash.
1,000 Tons	Long Steel Rails	17.25 cash.
500 Tons	Long Steel Rails	17.25 cash.
500 Tons	American T's	23.75 cash.

Steel Slabs and Billets.

3,000 Tons	Steel Billets, Dec., Jan., Feb.	24.25 cash.
3,000 Tons	Steel Billets, at Wheeling Jan. to May	23.85 cash.
1,750 Tons	Steel Billets, Dec., Jan.	24.00 cash.
1,500 Tons	Steel Billets, at mill	23.65 cash.
1,500 Tons	Steel Billets, at Wheeling, Dec.	23.75 cash.
1,000 Tons	Steel Billets and Slabs, Jan., Feb.	24.25 cash.
1,000 Tons	Steel Billets, city furnace	24.50 cash.
500 Tons	Steel Billets	24.00 cash.

Muck Bar.

1,000 Tons	Neutral, Jan., Feb.	26.25 cash.
500 Tons	Neutral, Dec.	26.25 cash.
500 Tons	Neutral	26.00 cash.

Skelp Iron.

1,800 Tons	Narrow Grooved	1.60 4m.
1,200 Tons	Wide Grooved	1.62½ 4m.
1,000 Tons	Sheared iron	1.85 4m.

Steel Wire Rods.

650 Tons	American Fives, Jan., Feb.	34.00 cash.

Scrap Material.

500 Tons	Iron Axles Hammered, net	26.00 cash.
200 Tons	Leaf Steel, gross	20.00 cash.
100 Tons	No. 1 R. R. W. S., net	20.00 cash.
100 Tons	Coil Steel, gross	18.00 cash.
50 Tons	Iron Axles Hammered Extra, net.	27.00 cash.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Nov. 28.		Nov. 30.		Dec. 1.		Dec. 2.		Dec. 3.		Dec. 4.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams													
Alice, Mont											1.35		300
Aspen													
Atlantic, Mich													
Belcher, Nev													
Belle Isle, Nev					45		45		40				1,400
Bodie Cons., Cal			67		75		75				60		1,100
Bos. & Mont., Mont											39.13		30
Breece, Colo													
Bulwer, Cal											50		100
Caledonia, S. Dak													
Catalpa													
Chrysolite, Colo													
Colorado Central, Colo													
Commonwealth, Nev													
Comstock T. bonds, Nev.			.28										500
" scrip., Nev													
Cons. Cal. & Va., Nev									4.50		3 80		200
Crown Point, Nev			1 25						1 25		1 10		300
Deadwood, Dak													
Eureka Cons., Nev													
Father de Smet, S. Dak													
Franklin, Mich													
Freeland, Colo													
Gould & Curry, Nev			1.40						1 40		1 25		350
Granite Mountain, Mont.													
Hale & Norcross, Nev	1.50												100
Homestake, Dak													
Horn Silver, Utah	3.85		4 00	3 90					4.00				2,585
Independence, Nev													
Iron Hill													
Iron Silver													
Leadville Cons., Colo	.13		.13		.10		.13		.10	.06	.13		2,800
Little Chief, Colo	.27												500
Minnesota Iron Co													
Mono, Cal													
Mt. Diablo, Nev													
Navajo, Nev													
N. Belle Isle, Nev									.35				100
Ontario, Utah													
Ophir, Nev	3.50				3.35		3.35				2.75		400
Osceola, Mich													
Plymouth, Cal	2 50		2.25										400
Quicksilver, Pref., Cal													
" Com., Cal													
Quincy, Mich													
Robinson Cons., Colo									.46				200
Savage, Nev	1.50		1.40						1.60		1.30		375
Sierra Nevada, Nev											1.75		25
Silver Cord, Colo													
Silver King, Ariz													
Silver Mg. of L. V., N. M.													
Small Hopes, Colo													
Standard													
Yellow Jacket, Nev	1 65		1 55						1 50				300

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Nov. 28.		Nov. 30.		Dec. 1.		Dec. 2.		Dec. 3.		Dec. 4.		Sales
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Allouez											2.00		100
Alta			.90		1.00		1 00						300
American Flag, Colo													
Andes, Cal													
Astoria, Cal													
Augusta, Ga													
" bonds													
Barcelona, Nev													
Belmont, Cal													
Best & Belcher, Nev	2 50		2.40		2 25		2 25		2.25				625
Bonanza King, Cal													
Brunswick, Cal													
Bullion, Nev													
Butte & Bost., Mont													
Castle Creek, Idaho													
Chollar	1.50		1 50										200
Comstock T., Nev	.17		.16	.15	.16		16						3,900
Con. Imperial, Nev													
Con. Pacific, Cal													
Crescent, Colo													
Del Monte, Nev													
El Cristo, Rep. of Col	.41												50
Emmett	.35												500
Exchequer, Nev	.75												400
Hollywood, Cal													
Huron, Mich													
Julia	.18												200
Kossuth													
Lacrosse, Colo													
Lee Basin, Colo													
Mexican, Nev	2.45		2.30		2 30		2.30				1 9		600
Middle Bar, Cal													
Monitor, Colo													
Mutual S. & M. Co., Wash													
Nevada Queen, Nev													
N. Standard, Cal													
N. Commonwealth, Nev													
Occidental, Nev													
Overman													
Phœnix Lead, Colo													
Phœnix of Ariz			.42		.40		.40		.40				800
Potosi, Colo													
Rappahannock, Va													
S. Sebastian, S. Sal													
Santa Fe, N. M													
Scorpion, Nev													
Seg. Belcher, Nev													
Shoshone, Idaho													
Silver Queen													
Sullivan Con., Dak													
Sutro Tunnel, Nev													
Syndicate													
Tornado Con., Nev													
Union Cons., Nev			1.95										215
Utah, Nev	.75		.75						.65		1 15		1,100

Ex dividend. †Dealt in the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. ¶ Dividend shares sold, 11,965. Non-dividend shares sold, 8,890. Total shares sold, 20,855.

BOSTON MINING STOCK QUOTATIONS.

Name of Company.	Nov. 27.		Nov. 28.		Nov. 30.		Dec. 1.		Dec. 2.		Dec. 3.		Sales.
Atlantic, Mich	11.00	10 00			10.50		11.00						160
Bodie, Cal													
Bonanza Development													
Bost. & Mont., Mont	38.25	37.50	37.50	37.13	37.00	36.63	37.50	37.00	38.00	37.25	39.00	38 50	3,996
Breece, Colo													
Calumet & Hecla, Mich			260		260	258	258	257	260	258			99
Catalpa, Colo													
Central, Mich													
Cœur d'Alene, Id													
Con. Cal. & Va., Nev													
Dunkin, Colo													
Eureka, Nev													
Franklin, Mich					15.13	15.00	14.87		15.00				400
Hcnorine, Utah													
Horn Silver, Utah													
Kearsarge, Mich			11.00						11.00		12.25	12.00	210
Little Chief, Colo													
Little Pittsburg, Colo													
Minnesota Iron													
Napa, Cal	4.50										4.50		600
Ontario, Utah													
Osceola, Mich	29 00		28.00		27.00	26.00	26.00		27 00		28.75	27.00	545
Quincy, Mich													
Ridge, Mich	.75												100
Sierra Nevada, Nev													
Silver King, Ariz													
Stormont, Utah													
Tamarack, Mich	157	154			154	150			150		158	152	397
Tecumseh, Mich													

Name of Company.	Nov. 27.		Nov. 28		Nov. 30.		Dec. 1.		Dec. 2.		Dec. 3.		Sales
Allouez, Mich	1 93	1.87			1 75	1.63							1,275
Arnold, Mich													
Aztec, Mich													
Brunswick, Cal													
Butte & Boston, Mont	14.75	14.50	14.00		14 50	13.75					15.50	14.50	365
Centennial, Mich	12.00						12.00	11.87	12.50	12.00	13.50	13 25	1,000
Colehis													
Copper Falls, Mich													
Crescent, Colo													
Dana, Mich													
Don Enrique, N. M													
Geyser													
Hanover, Mich													
Humboldt, Mich													
Hungarian, Mich													
Huron, Mich													
Mesnard, Mich													
National, Mich													
Native, Mich													
Oriental & M., Nev													
Phoenix, Ariz													
Pontiac, Mich													
Rappahannock, Va													
Santa Fe, N. Mex							.30						500
Shoshone, Idaho													
South Side, Mich													
Star, Mich													
Washington, Mich													
Wolverine													

Dividend shares sold, 6,475. Non-dividend shares sold, 3,740. Total shares sold, 10,215.

COAL STOCKS.

Name of Company.	Nov. 28.		Nov. 30.		Dec. 1.		Dec. 2.		Dec. 3.		Dec. 4.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal													
Cambria Iron			73⅛				73	72⅞	72⅞				108
Cameron Coal & I. Co			1½						1½				200
Ches. & O. R. R													
Chic. & Ind. Coal R. R													
Do. pref													
Col. C. & I			35⅜	34	34¾	33⅝	34⅛						1,610
Col. C. & Hocking C. I													
Consolidation Coal													
Del. & H. C	123¼	123	123⅝	123⅝	123¾	121⅞	122⅝	120¼	122	12 5⅝	121⅞	121⅛	6,982
D., L. & W. R. R	137¼	137⅛	138	137	138	137¼	137⅝	136¾	137⅝	137⅛	137⅛	136⅝	35,428
Hocking Valley	28⅜		28⅛	28	28	27¼	28		28⅛	27⅞	28¼		1,330
Hunt & Broad Top			25¼	24⅞	24⅝				24⅝				186
Do. pref			47½		47½		47½		47½				275
Illinois C. & Coke Co													
Lehigh C. & N	48¾		48⅝	48¼	48⅝	48¼	48⅝	48¼	48⅝	48⅛			269
Lehigh Valley R. R	49⅜	49⅛	49⅜	49⅜	49⅝	49⅛	49¾	49⅝	49⅞	49¼			623
Lehigh & Wilk. Coal													
Mahoning Coal													
Do. pref													
Maryland Coal									22½				300
Morris & Essex							143½						40
New Central Coal			10¾										100
N. J. C. R. R			113⅞	113	114	113¼	114	112			112½		880
N. Y. & S. Coal													
N. Y., Susq. & West							9		9½	9			250
Do. pref									37½				100
N. Y. & Perry C. & I													
Norfolk & West. R. R											16¾		100
Do. pref							51½				51½	51¼	650
Penn. Coal													
Penn. R. R	54¾	54⅛	54¾	54⅛	54¾	54⅛	54¾	54⅛	54¾	54⅝			5,862
Ph. & R. R. R	38⅞	38⅛	39	38⅛	39	37⅞	38⅛	38	38¾	38¼	38¼	37¾	61,410
Sunday Creek Coal													
Do. Pref													
Tennessee C. & I. Co	39	38¾	39¼	39	39		39	38⅛	39¼		39⅛	39	2,350
Do. pref													
Westmoreland Coal													

Total shares sold, 120,943.

San Francisco Mining Stock Quotations.

Names of Stocks.	Closing Quotations. Nov. 27.	Nov. 28.	Nov. 30.	Dec. 1.	Dec. 2.	Dec. 3.
Alpha	.85	.80	.80	.90	.85	.70
Alta	.85	.80	.80	.90	.85	.70
Belcher						
Belle Isle	.35	.35	.25	.30	.30	.35
Best & Belcher	2.30	2.25	2.15	2.10	2.10	1.80
Bodie	.55	.55	.50	.70	.70	.50
Bulwer	.20	.35	.35	.50	.45	.45
Chollar	1.40	1.35	1.30	1.35	1.30	1.05
Commonwealth	.20	.20	.20	.20	.20	.20
Cons. Cal. & Va	4.90	4.60	4.50	4.60	4.30	3.85
Cons. Pacific						
Crown Point	1.15	1.15	1.10	1.15	1.10	.95
Del Monte, Nev						.30
Eureka Consolidated						
Gould & Curry	1.30	1.30	1.25	1.25	1.30	1.10
Hale & Norcross	1.40	1.40	1.25	1.25	1.30	1.15
M. White						
Mexican	2.30	2.20	2.15	2.20	2.10	1.80
Mono	.35	.35	.35	.45	.40	.35
Mt. Diablo						
Navajo	.15	.15	.15	.15	.15	.15
Nev. Queen	.20	.20	.20		.15	
N. Belle Isle	.30	.25	.35	.25	.35	.30
N. Commonwealth						
Ophir	3.35	3.20	3.10	3.20	2.95	2.55
Potosi	1.90	1.80	1.60	1.55	1.45	1.40
Savage	1.35	1.25	1.20	1.15	1.45	1.30
Sierra Nevada	2.50	2.42	2.30	2.30	2.20	1.90
Union Con	1.95	1.80	1.80	1.85	1.85	1.60
Utah	.60	.60	.60	.60	.55	.55
Yellow Jack	1.30	1.50	1.40	1.50	1.40	1.15

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares		Assessments				Dividends			
			No.	Par	Total levied.	Date and amount of last			Total paid.	Date & amount of last.		
1	Adams, s. L. C.	Colo.	$1,500,000	150,000	$10	*				$607,500	Sept.	1891 .05
2	Alice, s.	Mont.	10,000,000	400,000	25	*				945,000	Aug.	1891 .06¾
3	Alma & Nel Wood., g	Idaho	300,000	30,000	10	*				63,000	Jan.	1889 .50
4	Amador, g.	Cal.	1,250,000	250,000	5	*				31,250	Aug.	1890 .12½
5	American Belle, s. & C.	Colo.	2,000,000	400,000	5	*				50,000	April	1891 .12½
6	Americ'n & Nettie, g. & s.	Colo.		300,000						150,000	Nov.	1889 .10
7	Amy & Silversmith, s.	Mont.		341,419						247,539	Aug.	1887 .12½
8	Atlantic, c.	Mich.	1,000,000	40,000	25	$280,000	April	1875 $1.00		700,000	Feb.	1891 1.00
9	Argenta, s.	Nev.	10,000,000	100,000	100	335,000	July	1889 .10		40,000	Feb.	1890 .20
10	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*				666,000	May	1891 .10
11	Aurora, L.	Mich.	2,500,000	100,000	25	*				55,000	April	1891 1.00
12	Badger, s.	Ont.	250,000	50,000	5	*				37,500	Mar.	1890 .25
13	Bangkok Cora-Bell, s.	Colo.	600,000	600,000	1	*				44,510	Aug.	1890 .00½
14	Belle Isle, s.	Nev.	10,000,000	100,000	100	190,000	Dec.	1889 .15		300,000	Dec.	1879 .25
15	Belcher, s. G.	Nev.	10,400,000	104,000	100	2,978,000	Feb.	1891 .50		15,397,000	April	1876 1.00
16	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000	Dec.	1889 .25		200,000	Jan.	1890 .10
17	B. Metallic, s. G.	Mont.	5,000,000	200,000	25	*				1,100,000	Oct.	1891 .35
18	Bodie Con., G. L.	Cal.	10,000,000	100,000	100	550,000	June	1890 .25		1,602,572	April	1885 .50
19	Boston & Mont., G.	Mont.	2,500,000	250,000	10	*				520,000	June	1886 .15
20	Boston & Mont., c. s.	Mont.	3,125,000	125,000	25	*				2,075,000	Nov.	1891 1.00
21	Breece, L.	Colo.	5,000,000	200,000	25	*				2,000	Feb.	1880 .01
22	Brooklyn Lead, L. S.	Utah.	500,000	50,000	10	*				127,000	July	1887 .05
23	Bulwer, G.	Cal.	10,000,000	100,000	100	130,000	Aug.	1889 .25		175,000	Jan.	1884 .10
24	Bunker Hill & S. S. L.	Idaho	3,000,000	300,000	10	*				150,000	Oct.	1883 .00⅜
25	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885 .15		192,000	Oct.	1890 .08
26	Calliope, s.	Colo.	1,000,000	1,000,000		*				140,000	Jan.	1891 .00½
27	Calumet & Hecla C.	Mich.	2,500,000	100,000	25	1,300,000				36,350,000	Sept.	1891 5 00
28	Catalpa, s. L.	Colo.	3,000,000	300,000	10	*				270,000	May	1884 .10
29	Centen'l-Eureka, s. L.	Utah.	1,500,000	30,000	50	*				442,500	Oct.	1891 1.00
30	Central, C.	Mich.	500,000	20,000	25	100,000	Oct.	1861 .65		1,970,000	Feb.	1891 1.00
31	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec	1884 .25
32	Clay County, G.	Colo.	200,000	200,000	1	*				44,000	Aug.	1891 .02
33	Cœur D'Alene, s. L.	Idaho	5,000,000	500,000	10	*				310,000	Nov.	1891 .02
34	Colorado Central, s. L.	Colo.	2,750,000	275,000	10	*				406,250	Aug.	1889 .05
35	Commonwealth, s.	Nev	10,000,000	100,000	100	170,000	Nov.	1888 .50		20,000	Nov.	1890 .20
36	Confidence, s. L.	Nev.		24,960		328,880	May	1890 .75		199,680	April	1889 1.00
37	Cons. Cal. & Va., s. G.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885 .20		3,682,800	Aug.	1891 .50
38	Contention, s.	Ariz.	12,500,000	250,000	50					2,587,500	Dec.	1884 .25
39	‖Cop. Queen Con., c.	Ariz.	1,400,000	140,000	10					210,000	Feb.	1889 .50
40	Cortez, s.	Nev.	1,500,000	300,000	05	*				481,000	Feb.	1891 .46
41	Crescent, s. L. G.	Utah.	15,000,000	600,000	25	*				228,000	Oct.	1888 .03
42	Crown Point, G. & S.	Nev.	10,000,000	100,000	100	2,425,000	Sept.	1889 .50		11,588,000	Jan.	1875 2.00
43	Cumberland, L. & S.	Mont.	5,000,000	500,000	10	*				15,000	Nov.	1889 .03
44	Daly, s. L.	Utah.	3,000,000	150,000	20	*				2,137,500	Sept.	1891 .25
45	Deer Creek, s. G.	Idaho	1,000,000	200,000	5	*				20,000	June	1889 .05
46	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				1,690,000	Oct.	1891 .05
47	DeLamar, s. G.	Idaho	2,000,000	400,000	5	*				144,000	Oct.	1891 .13
48	Derbec B. Grav., G.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881 .10		240,000	Oct.	1890 .10
49	Dunkin, s. L.	Colo.	5,000,000	200,000	25	*				390,000	Oct.	1889 .05
50	Dunstone, G. s. L.	Mont.	1,000,000	200,000	5	*				6,000	Nov.	1888 .03
51	Eclipse, L. s.	Colo.	100,000	100,000	1	*				20,000	Nov.	1887 10
52	Elkhorn, s. L.	Mont.	1,000,000	200,000	5	*				‡396,000	June	1891 1.00
53	Enterprise, s.	Colo.	100,000	10,000	10	*				40,000	May	1888 1.00
54	Eureka Con., s. L. G.	Colo.	5,000,000	50,000	100	550,000	June	1889 .50		4,892,500	Oct.	1890 .25
55	Evening Star, s. L.	Colo.	500,000	50,000	10	*				1,450,000	Dec.	1889 .25
56	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov.	1878 1.00		1,125,000	Dec.	1885 .20
57	Franklin, C.	Mich.	1,000,000	40,000	25	220,000	June	1871		‡940,000	July.	1891 2.00
58	Freeland, s. G.	Colo.	5,000,000	200,000	25	*				190,000	July	1886 .10
59	Garfield Lt., G. s.	Nev.	500,000	100,000	5					90,000	April	1888 .12½
60	Gould & Curry, s. G.	Nev.	10,800,000	108,000	100	3,988,800	Sept.	1890 .25		3,826,000	Oct.	1870 10.00
61	Grand Prize, s.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890 .30		495,000	Mar.	1884 .25
62	Granite, s. L.	Idaho	500,000	500,000	1	*				28,400	Oct.	1889 .02
63	Granite Mountain, s.	Mont.	10,000,000	400,000	25	*				11,400,000	Oct.	1891 .25
64	Green Mountain, G.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1891 .07½
65	Hale & Norcross, G. s.	Nev.	11,200,000	112,000	100	5,142,800	April	1890 .50		1,822,000	Aug.	1888 .50
66	Hecla Con., G. L. C.	Mont.	1,500,000	30,000	50					1,680,000	Aug.	1891 .50
67	Hel'a Mg. & Red, s. L. G.	Mont.	3,315,000	663,000	5	*				197,970	July	1886 .06
68	Holmes, s.	Nev.	10,000,000	100,000	100	370,000	May	1890 .25		75,000	April	1886 .25
69	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878 1.00		4,756,250	Sept.	1891 .10
70	Honorine, s. L.	Utah.	500,000	250,000	2	37,500	April	1889 .05		125,000	Sept.	1887 .05
71	Hope, s.	Mont.	1,000,000	100,000	10	*				233,252	April	1888 .25
72	Horn-Silver, s. L.	Utah.	10,000,000	400,000	25	*				4,300,000	Sept.	1891 12½
73	Hubert, G.	Colo.	1,000,000	1,000,000	1	*				247,000	Dec.	1889 .00½
74	Idaho, G.	Cal.	310,000	3,100	100	*				2,325,450	Oct.	1891 2.00
75	Illinois, s.	N. M.	100,000	100,000	1	*				45,000	April	1889 .20
76	Iron Hill, s.	Dak.	2,500,000	250,000	10	134,000	July	1889 .03		156,250	Nov.	1887 .07½
77	Iron Mountain, s.	Mont.	500,000	500,000	1	*				129,000	Feb.	1891 .05
78	Iron-Silver, s. L.	Colo.	10,000,000	500,000	20	*				2,850,000	April	1891 .20
79	Jackson, G. s.	Nev.	5,000,000	50,000	100	237,500	Nov.	1880 .20		64,000	Jan.	1891 .10
80	Jay Gould, G. s.	Mont.	2,000,000	40,000	5	*				459,000	May	1890 .04
81	Kearsarge, C.	Mich.	1,000,000	40,000	25	190,000	Oct.	1887 1.00		80,000	Jan.	1890 2.00
82	Kentuck, s. G.	Nev.	3,000,000	30,000	100	417,430	Dec.	1890 .35		1,350,000	Dec.	1886 .10
83	La Plata, s. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept.	1892 .30
84	Leadville Con., s. L.	Colo.	4,000,000	400,000	10	*				420,000	April	1882 .05
85	Lexington, G. s.	Mont.	4,000,000	40,000	100	*				565,000	Jan.	1885 2.00
86	Little Chief, s. L.	Colo.	10,000,000	200,000	50	*				820,000	Dec.	1890 .05
87	Little Rule, s.	Colo.	500,000	500,000	1					19,000	Sept.	1891 .02
88	Mammoth, s. L. C.	Utah	10,000,000	400,000	25	110,000		1882 .25		960,000	June	1891 .10
89	Martin White, s.	Nev.	10,000,000	100,000	100	1,225,000	Oct.	1890 .25		140,000	Dec.	1886 .25
90	Mary Murphy, s. G.	Colo.		3,500	100	*				175,000	May.	1888 5.00
91	Matchless, s. L.	Colo.	500,000	500,000	1	*				15,000	Feb.	1890 .00½
92	May Mazeppa, s. L.	Colo.	1,000,000	100,000	1	*				168,000	July.	1891 .01½
93	Minas Prietas, G. s.	Mex.	1,000,000	100,000	10	*				350,000	Dec.	1890 .50
94	Minnesota, C.	Mich.	1,000,000	40,000	25	420,000	April	1886 1.00		1,820,000	Mar.	1876
95	Mollie Gibson, s.	Colo.	5,000,000	1,000,000	5	*				700,000	Oct.	1891 .05
96	Monitor, G.	S. Dak.	2,500,000	250,000	10					45,000	Oct.	1890 .03
97	Mono, G.	Cal.	5,000,000	50,000	100	760,000	Sept.	1890 .25		12,500	Mar.	1886 .25
98	Montana, Lt., G. s.	Mont.	3,300,000	660,000	5	*				2,619,075	June.	1891 .12½
99	Morning Star, s. L.	Colo.	1,000,000	100,000	10					925,000	April	1891 .25
100	Moulton, s. G.	Mont.	2,000,000	400,000	5	*				380,000	Dec.	1887 .07½
101	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887 .30
102	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880 2.00		180,000	Sept.	1890 .40
103	Napa, G.	Cal.	700,000	100,000		*				430,000	Oct.	1891 .10
104	Navajo, G. s.	Nev.	10,000,000	100,000	100	500,000	April	1890 .15		229,950	April	1889 .10
105	New California, G.	Colo.	800,000	160,000	5	*				48,800	May.	1890 12½
106	New Guston, s.	Colo.	550,000	110,000	5	*				995,000	Oct.	1891 1.00
107	N. Hoover Hill, G. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885 .06½
108	Northern Belle, s.	Colo.	5,000,000	50,000	100	425,000	Jan.	1884 8.00		2,400,000	April	1883 .50
109	North Belle Isle, s.	Nev.	10,000,000	100,000	100	395,000	April	1890 .20		230,000	April	1889 .50
110	North Star, G.	Cal.	1,000,000	100,000	10	*				960,000	April	1889 .50
111	Ontario, s. L.	Utah.	15,000,000	150,000	100	*				12,275,000	Sept.	1891 .50
112	Ophir, G. s.	Nev.	10,000,000	100,000	100	4,210,640	April	1890 .50		1,595,800	Jan.	1880 1.00
113	Original, s. C.	Mont.	1,500,000	60,000	25	*				138,000	Jan.	1889 .05
114	Oro, s. L. G.	Colo.	500,000	100,000	5	*				95,000	July	1890 .20
115	Osceola, C.	Mich.	1,250,000	50,000	25	480,000	April	1876 1.60		1,547,500	Oct.	1891 1.00
116	Parrot, C.	Mont.	1,800,000	180,000	10	*				850,000	May.	1891 .10
117	Peacock, s. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886
118	Plumas Eureka, G.	Cal.	1,406,250	140,625	10	*				2,548,000	Oct.	1889 .37½
119	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888 .40
120	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100					1,570,161	Jan.	1891 1.50
121	" com., Q.	Cal.	5,700,000	57,000	100					643,867	July	1888 .40
122	Quincy, C.	Mich.	1,000,000	40,000	25	200,000	Dec.	1862		5,970,000	Aug.	1891 5.00
123	Reed National, s. G.	Colo.	500,000	500,000	1	*				50,000	Dec.	1890 .01
124	Rialto, G.	Colo.	300,000	300,000	1	*				21,000	Oct.	1891 .01¼
125	Richmond, s. L.	Nev.	1,350,000	54,000	25	*				4,332,387	Jan	1891 .62½
126	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar.	1866 .50		99,795	Feb.	1890 .50
127	Robinson Con., G.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1890 .05
128	Running Lode, G.	Colo.	1,000,000	1,000,000	1	*				20,000	Aug.	1891 .00½
129	Savage, s.	Nev.	11,200,000	112,000	100	6,004,000	Nov.	1889 .50		4,460,000	June	1869 3.00
130	Sheridan, s. G.	Colo.	300,000	3,000	100	*				225,000	Dec.	1890 3.33⅓
131	Shoshone, G.	Idaho	150,000	150,000	1					7,500	April	1883 .01
132	Sierra Buttes, G.	Cal.	2,225,000	222,500	10					1,492,250	April	1888 .12½
133	Sierra Nevada, s. G.	Nev.	10,000,000	100,000	100	6,446,910	Oct.	1890 .50		102,000	April	1871 1.00
134	Sierra Nevada, s. L.	Idaho	1,000,000	1,000,000	1	*				40,000	May.	1889 .02
135	Silent Friend.	Colo.	500,000	500,000	1					47,500	Aug.	1891 .03
136	Silver Cord, s. L. G.	Colo.	4,500,000	450,000	10					265,000	April	1889 .10
137	Silver King, s.	Ariz.	10,000,000	100,000	100	130,000	Nov.	1890 .30		1,950,000	July	1887 .25
138	Silver Mg. of L. V., s. L.	N. M.	500,000	500,000	1	*				375,000	May	1891 .05
139	Small Hopes Con., s.	Colo.	5,000,000	250,000	20	*				3,162,500	Oct.	1890 .10
140	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886 .25		50,000	Jan.	1881 .25
141	Standard, G. s.	Cal.	10,000,000	100,000	100	100,000	June	1890 .50		3,605,000	Oct.	1891 .10
142	Stormont, s.	Utah.	500,000	500,000	1	*				155,000	Nov	1881 .05
143	St. Joseph, L.	Mo.	1,500,000	150,000	10	*				1,974,000	Dec.	1890 .02
144	Tamarack, C.	Mich.	1,250,000	50,000	25	520,000	April	1885 3.00		2,290,000	Nov.	1891 4.00
145	Tombstone, G. s. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	April	1882 .10
146	United Verde, C.	Ariz.	3,000,000	300,000	10	*				127,500	May.	1890 .10
147	Viola L., s. L.	Idaho	750,000	150,000	5					337,500	Nov.	1888 .37½
148	Ward Con., s.	Colo.	2,000,000	200,000	10					20,000	Dec.	1889 .05
149	Woodside, s. L.	Utah.	100,000	100,000	10					25,000	Oct.	1890 .25
150	W. Y. O. D.	Cal.	350,000	15,000	2	11,250	Feb.	1891 .10		4,500	May.	1891 .10
151	Yankee Girl, s.	Colo.	2,500,000	250,000	10	*				1,405,000	April	1891 .50
152	Yellow Jacket, G. s.	Nev.	12,000,000	120,000	100	5,508,000	Mar.	1889 .50		2,184,000	Aug.	1871 2.50
153	Young America, G.	Cal.								175,000	Jan.	1889 .10

NON-DIVIDEND PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares		Assessments	
			No.	Par	Total levied.	Date and am't of last.
1	Allegheny, s.	Colo.	$5,000,000	500,000	$10	*
2	Alliance, s. G.	Utah.	100,000	100,000	1	
3	Allouez, C.	Mich.	2,000,000	80,000	25	$120,000 Feb. 1891 .20
4	Alpha Con., G. s.	Nev.	3,000,000	30,000	100	737,000 Jan. 1890 .70
5	Alta, s.	Nev.	10,000,000	100,000	100	112,500 Sept. 1890 .25
6	American Flag, s.	Colo.	1,250,000	125,000	10	3,359,800 Sept. 1890 .50
7	Amity, s.	Colo.	250,000	250,000	1	300,000 June 1887
8	Anchor s. L. G.	Utah.	3,000,000	150,000	20	
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	5	410,000 June 1890 .20
10	Astoria, G.	Cal.	200,000	160,000	2	
11	Barcelona, G.	Nev.	5,000,000	200,000	25	
12	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500 1883 .10
13	Belmont, G.	Cal.	500,000	500,000	1	*
14	Belmont, s.	Nev.	5,000,000	50,000	100	735,000 April 1886 .10
15	Best & Belcher, s. G.	Nev.	10,080,000	100,800	100	2,279,275 Aug. 1890 .25
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000 Nov. 1883 .25
18	Bremen, s	N. M.	5,000,000	500,000	10	*
19	Brownlow, G.	Colo.	250,000	250,000	1	
20	Brunswick, G.	Cal.	2,000,000	400,000	5	*
21	Buckeye, s. L.	Mont.	1,000,000	500,000	2	
22	Bullion, s. G.	Nev.	10,000,000	100,000	100	2,790,000 Dec. 1889 .25
23	Butte & Boston, C. s.	Mont.	5,000,000	200,000	1	
24	Calaveras, G.	Cal.	500,000	500,000	1	*
25	Carisa, G.	Wy.	500,000	100,000	5	*
26	Carupano, G. s. L. C.	Ven.	200,000	100,000	2	*
27	Cashier, G. s.	Colo.	500,000	250,000	2	*
28	Cherokee, G.	Cal.	1,500,000	150,000	13	*
29	Chollar, s. G.	Nev.	11,200,000	112,000	100	1,540,000 Nov. 1889 .50
30	Cleveland, T.	Dak.	1,000,000	500,000	2	*
31	Colchis, s. G.	N. M.	500,000	50,000	10	*
32	Colorado Silver	Colo.	1,625,000	325,000	5	*
33	Comstock Tun.	Nev	10,000,000	100,000	100	35,000 Mar 1887 .15
34	Con. Imperial, G. s	Nev	5,000,000	50,000	100	1,875,000 July 1890 .05
35	Con. New York, s. G.	Nev.	5,000,000	100,000	50	70,000 Nov. 1890 .15
36	Con. Pacific, G.	Cal.	6,000,000	60,000	100	198,000 June 1890 .10
37	Con. Silver, s.	Mo.	2,500,000	250,000	10	*
38	Crescent, s. L.	Colo.	3,000,000	300,000	10	*
39	Crocker, s.	Ariz.	10,000,000	100,000	100	150,000 June 1890 .15
40	Crowell, G.	N. C.	500,000	500,000	1	
41	Dahlonega, G.	Ga.	250,000	250,000	1	*
42	Dandy, s.	Colo.	5,000,000	500,000	10	*
43	Decatur, s.	Colo.	1,500,000	300,000	5	*
44	Denver City, s.	Colo.	5,000,000	500,000	10	*
45	Denver Gold, G.	Colo.	300,000	60,000	5	
46	Dickens-Custer, s.	Idaho	2,100,000	420,000	5	
47	Durango, G.	Colo.	500,000	500,000	1	*
48	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000 Mar 1886 1.00
49	El Cristo, G. s.	U.S.C.	1,000,000	500,000	2	
50	El Dorado, G.	Cal.	1,000,000	250,000	4	*
51	El Talento, G.	U.S.C.	1,000,000	500,000	2	
52	Emmons, s. L.	Colo.	2,000,000	2,000,000	1	
53	Empire, s.	Utah.	10,000,000	100,000	100	
54	Eureka Tunnel, s. L.	Nev.	10,000,000	100,000	100	*
55	Exchequer, s. G.	Nev.	10,000,000	100,000	100	865,000 July 1890 .25
56	Found Treasure, G. s.	Nev.	10,000,000	100,000	100	81,500 May 1890 .25
57	Gogebic L. Syn., L.	Wis.	5,600,000	200,000	25	
58	Gold Cup, s.	Colo.	500,000	500,000	1	*
59	Golden Era, s.	Mont.	2,000,000	200,000	10	*
60	Gold Road, G.	Cal.	1,000,000	500,000	2	*
61	Goodshaw, G.	Cal.	10,000,000	100,000	100	*
62	Grand Belt, C.	Tex.	12,000,000	120,000	100	*
63	Grand Duke.	Colo.	800,000	80,000	10	
64	Great Remance, G.	U.S.C.	1,000,000	500,000	2	*
65	Gregory Con., G.	Mont.	3,000,000	300,000	10	
66	Harlem G. & M. Co., G.	Cal.	1,000,000	200,000	5	
67	Hartery Con., G.	Cal.	1,000,000	100,000	10	22,000 Oct. 1890 .05
68	Head Cent. & Tr., s. G.	Ariz.	10,000,000	100,000	100	
69	Hector, G.	Cal.	1,500,000	300,000	5	45,000 Jan. 1889 .15
70	Highland, C.	Mich.	500,000	25,000	20	
71	Holywood.	Cal.	200,000	100,000	2	
72	Hortense, s.	Colo.	2,000,000	200,000	10	
73	Huron, C.	Mich.	1,000,000	40,000	25	280,000 May 1887 3.00
74	Iron, Gold & Silver, s.	N. M.	2,000,000	200,000	10	*
75	Ironton, L.	Wis.	1,000,000	40,000	25	
76	Iroquois, C.	Mich.	1,250,000	50,000	25	
77	J. D. Reymert, s.	Ariz.	10,000,000	100,000	100	
78	Julia Con., G. s.	Nev.	11,000,000	110,000	100	1,463,000 Jan. 1889 .10
79	Lacrosse, G.	Colo.	1,000,000	100,000	10	*
80	Lee Basin, s.	Colo.	5,000,000	500,000	10	*
81	Madeleine, G. s. L.	Colo.	750,000	750,000	1	*
82	Mammoth Gold, G.	Ariz.	245,000	49,000	5	*
83	Mayflower Gravel, G.	Cal.	1,000,000	100,000	10	585,000 Mar 1890 .50
84	Medora, G.	Cal.	250,000	250,000	1	*
85	Merrimac Con., G. s.	Colo.	5,000,000	500,000	10	*
86	Mexican, G. s.	Nev.	10,000,000	100,000	100	2,791,960 Oct. 1890 .25
87	Middle Bar, G.	Cal.	400,000	200,000	2	*
88	Mike & Starr, s. C.	Colo.	1,000,000	200,000	5	*
89	Milwaukee, s.	Mont.	500,000	500,000	1	12,500 May. 1891 .01
90	Monitor, G.	Colo.	100,000	1,000,000	1	*
91	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*
92	Native, C.	Mich.	1,000,000	40,000	25	
93	Neath, G.	Colo.	1,000,000	100,000	10	
94	Nevada Queen, s.	Nev.	10,000,000	100,000	100	200,000 Oct. 1889 .25
95	New Germany, G.	N. S.	100,000	100,000	1	*
96	New Pittsburg, s. L.	Colo.	2,000,000	200,000	10	*
97	N. Commonw'lth, s.	Nev.	10,000,000	100,000	100	85,000 April 1890 .25
98	North Standard, G.	Cal.	10,000,000	100,000	100	20,000 Nov 1890
99	Noonday.	Cal.	600,000	60,000	10	208,000 Dec. 1881 .10
100	Oneida Chief, G.	Cal.	500,000	125,000	100	*
101	Oriental & Miller, s.	Nev.	10,000,000	400,000	25	
102	Osceola, G.	Nev.	5,000,000	500,000	10	*
103	Overman, G. s.	Nev.	11,520,000	115,200	100	3,832,800 Dec. 1889 .25
104	Park, s.	Utah.	2,000,000	200,000	10	
105	Peer, s.	Ariz.	10,000,000	100,000	100	165,000 Oct. 1890 .10
106	Peerless, s.	Ariz.	10,000,000	100,000	100	405,000 Oct. 1890 .15
107	Phœnix.	Ariz.	500,000	500,000	1	*
108	Phœnix Lead, s. L.	Colo.	100,000	100,000	1	*
109	Pilgrim, G.	Cal.	600,000	300,000	2	*
110	**Pioche M. & R., s. G. L.	Utah.	20,000,000	2,000,000	10	*
111	Potosi, s.	Nev.	11,200,000	112,000	100	1,573,000 Mar. 1890 .50
112	Proustite, s.	Idaho	250,000	250,000	1	*
113	Puritan, s. G.	Colo.	1,500,000	150,000	10	*
114	Quincy, C.	Colo.	3,000,000	300,000	10	*
115	Rappahannock, G. s.	V.	250,000	250,000	1	*
116	Red Elephant, s.	Colo.	500,000	500,000	1	*
117	Red Mountain, Ltd., s	Colo.	300,000	60,000	5	*
118	Ropes, G. s.	Mich.	2,000,000	80,000	25	147,200 July 1887 .50
119	Ruby & Dun., s. L. G.	Nev.	25,300	506	50	*
120	Russell, G. s. L.	N. C.	1,500,000	300,000	5	
121	San Carlos, G.	Utah.	10,000,000	100,000	100	288,157 July 1888 1.00
122	San Sebastian, G.

STOCK MARKET QUOTATIONS.

Aspen. Nov. 28.

The closing quotations were as follows:

Agnes C.	$....
Argentum Junista	1.05
Aspen Deep Shaft	.10
Aspen Contact	5.00
Best Friend	.24
Bimetallic	.35
Bushwacker	.38
Carbonate Chief	.08
Della S.	4.50
Homer & Alta	.10
Justice	.10
Little Annie	.17
Mollie Gibson	7.25
Nolan Creek	.10
Park, Mamie & Queen	....
Pontiac	.10
Smuggler	15.00
St. Joe & Mineral Farm	.15
Yellow Boy	.20

Baltimore, Md. Dec. 3.

COMPANY.	Bid.	Asked.
Atlantic Coal	$ ...	$1.10
Balt. & N. C.	.01	....
Big Vein Coal	....	1.25
Conrad Hill	....	.07
Cons. Coal	.27½	.28½
Diamond Tunnel	....	....
George's Creek Coal.	1.05	1.10
Lake Chrome	.13@.11	.20
Maryland & Charlotte	....	...
North State	....	....
Silver Valley	.51	.65

Pittsburg, Pa.

Prices highest and lowest for the week ending December 2d:

COMPANY.	H.	L.
Allegheny Gas Co.	$	$.
Bridgewater Gas Co.	....	....
Chartiers Val. Gas.	6.00	5.50
Columbia Oil Co.	....	....
Consignee Mining Co.	....	....
Consolidated Gas Co.	....	....
East End Gas Co	....	....
Fisher Oil Co.	66 00	65 50
Forest Oil	....	....
Hazlewood Oil Co.	....	....
Hidalgo Mining Co.	5.00	4.00
La Noria Mining Co.	.30	.25
Luster Mining Co.	11.75	11.25
Mansfield C. & C. Co.	....	...
Manufacturers Gas Co.	27.00	25 00
Nat. Gas Co. of W. Va	....	....
N. Y. & Clev. Gas Coal Co.	50.00	43.00
Ohio Valley Gas Co.	19.00	....
Pennsylvania Gas Co.	....	....
People's Natural Gas Co.	....	....
People's N. G. & P. Co.	8.88	6 50
Philadelphia Co	13.75	12.50
Pine Run Gas Co	....	....
Pittsburg Gas Co.	....	....
Red Cloud Mining Co	3.00	....
Silverton Mining Co.	....	....
South Side Gas Co.	....	....
Sterling Silver Mining Co.	....	....
Tuna Oil Co	....	....
Union Gas Co.	....	....
Washington Oil Co.	....	....
Wyoreland & Camb	....	....
Wheeling Gas Co.	24.00	21 75
Wlouse E. Light	14.00	11.00
Wlouse Air Brake Co.	100.00	99.75
Wlouse Brake Co., Ltd	70.00	65.00

Helena, Mont.

(Special report by SAMUEL K. DAVIS.)

Prices highest and lowest for week ending Nov. 28, 1891:

	L.	H.
Bald Butte (Mont.)	2.00	2.50
California (Castle), Mont.	22½	.25
Champion (Ora Fino), Mont.	.15	.25
Cleveland & Anchor, Idaho.	12½	.15
Combination(Phillipsb'g),Mont.	.75	1.00
Copper Bell (Cataract), Mont.	.10	.12½
Cumberland (Castle), Mont	2.00	2.50
Elizabeth (Phillipsburg), Mont.	1.50	1.60
Florence (Neihart), Mont.	....	....
Fourth of July, Wash.	.07½	.10
Glengary (Butte), Mont.	1.50	1.75
Great Eastern (Castle), Mont	50	.75
Helena & Victor, Mont.	2.25	3.00
Hiawatha (Cataract), Mont.	.05	.07½
Iron Mountain(Missoula),Mont	.82	.90
Iron Mountain Ext.	12½	.15
Jersey Blue (Butte)	12½	.25
Judge (Castle), Mont.	....	...
Jumbo (Castle), Mont.	....	....
Mac (Unionville), Mont	.15	.25
Milwaukee (Butte), Mont.	.02	.03½
None Such (Unionville), Mont.	.15	.15
O. R. & N. (Missoula), Mont.	.02½	.04
Poorman (Cœur d'Alene),Idaho	1.10	1.25
Queen of the Hills(Neihart)	....	....
Silver Arrow (Cataract), Mont.	....	....
Silver Crown (Ora Fino), Mont.	....	....
SouthernCross(DeerLodge),Mont	25	.30
Wall Street (Elliston), Mont.	.05	.07½
West Cumberland(Castle),Mont.	05	.07½
Yellowstone (Castle), Mont.	.25	.30

St. Louis. Dec. 2.

CLOSING PRICES.

	Bid.	Asked.
Adams, Colo.	$1.85	$.....
American & Nettie, Colo	.90	1.00
Aztec, N. Mex	....	.04½
Bi Metallic, Mont.	33.50	34.75
Central Silver	22½	.23¾
Elizabeth, Mont.	.92½	.95
Granite Mountain, Mont.	18.50	19.50
Hope, Mont.	1 35	....
Leo	....	....
Little Albert	.05	.05½
Neptrose Placer, Colo.	.08	.15
Mickey Breen	.04½	.05
Pat Murphy, Colo.	.05	.09
Small Hopes, Colo.	.90	.92½
Silver Age	.14	.15
Yuma, Ariz.	....	....

Trust Receipts.

Sales at the New York Stock Exchange for week ending Dec. 4:

	Sales.	Price H.	Price L.
American Cotton Oil	....	....	....
National Lead	9,361	16⅞	16⅛

Trust Stocks. Dec. 4.

Special report by C. I. Hudson & Co., members New York Stock Exchange

The following are the closing quotations:

CERTIFICATES.

Am. Cotton Oil, Com	$28½@$29
" " " Pfd	53½@ 54½
Am. Sugar Refineries, Com	86¾@ 87⅛
" " " Pfd	96¼@ 97
Distillers' & Cattle Feeders'	58¾@ 59
Linseed Oil	22 @ 40
National Cordage, Com	92¼@ 92⅝
" " Pfd	100 @102
National Lead	16⅞@ 17
Standard Oil	156½@157½
W. U. Beef Co.	11 @ 14

Foreign Quotations.

London. Nov. 21.

	Highest.	Lowest.
Amador, Cal.	4s. 3d.	4s.
American Belle, Colo.	4s. 6d.	4s.
Appalachian, N. C.	2d.	1d.
Colorado, Colo.	2s. 3d.	1s. 9d.
Cons. Esmeralda, Nev.	1s. 3d.	9d.
De Lamar, Idaho	23s.	22s.
Dickens Custer, Idaho.	1s.	6d.
East Arevalo, Idaho.	....	....
Elkhorn, Mont.	20s.	17s. 6d.
Elmore, Idaho	1s.	6d.
Emma, Utah	1s. 6d.	1s.
Flagstaff, Utah	4s. 9d.	4s. 3d.
Garfield, Nev	1s.	6d.
Golden Feather	7s. 6d.	6s. 6d.
Golden Gate, Cal.	5s.	4s. 6d.
Golden Leaf, Mont	5s. 9d.	5s. 3d.
Golden River, Cal.	....	....
Jay Hawk, Mont.	5s. 6d.	4s. 6d.
Josephine, Cal.	....	....
Kohinoor, Colo.	1s. 3d.	9d.
La Luz, Mex.	2s.	1s. 6d.
La Plata, Colo.	1s. 3d.	9d.
La Valera, Mex.	2s. 6d.	2s.
Maid of Erin, Colo.	£1⅜	£1¼
Mammoth Gold, Ariz.	2s. 3d.	1s. 9d.
Montana, Mont.	6s. 6d.	5s. 6d.
New California, Colo.	2s. 3d.	1s. 9d.
New Consolidated	1s.	6d.
New Eberhardt, Nev.	1s.	9d.
New Gold Hill, N. C.	1s. 3d.	9d.
New Guston, Colo.	£3½	£2⅞
New Hoover Hill, N.C.	2s. 6d.	....
New Russell, N. C.	9d.	3d.
New Viola, Idaho	1s 6d.	1s.
Old Lout, Colo	£⅜	£⅛
Parker Gold, N. C.	9d.	3d.
Pittsburg Cons., Nev	2s.	1s. 6d.
Richmond Con., Nev.	£1	£¾
Ruby, Nev.	6d.	3d.
Sam Christian, N. C.	1s. 3d.	9d.
Sierra Buttes, Cal.	7s. 6d.	5s.
" Plumas Eur., Cal.	12s. 6d.	10s.
United Mexican, Mex.	3s. 6d.	2s. 6d.
U. S. Placer, Colo.	....	....
West Argentine, Colo.	1s.	6d.
Yankee Girl, Colo.	8s. 6d.	7s. 6d.

Paris. Nov. 12.

	Francs.
East Oregon, Ore.	2.00
Forest Hill Divide, Cal.	60.00
Golden River, Cal.	120.00
" " parts	20.00
Laurium	780.00
Lexington, Mont	108.75
" parts	3.25
Nickel	860.00
Rio Tinto, Spain	522.50
" " oblig.	517.50
" " "	512.50
Tharsis, Spain	145.00
Vieille-Montagne	517.50

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, No. 8, pure, 1,040, ℔ lb. .05
Commercial, in bbls. and cbys. 01¾@.02¼
Carbonic, liquefied, ℔ lb. .30
Chromic, chem pure .90
for batteries .40
Hydrobromic, dilute, U. S. P. .25
Hydrocyanic, U. S. P. .45
Hydrofluoric .20
Alcohol—95%, ℔ gall. $2.30@$2.40
Absolute $3.80
Ammoniated $2.80
Alum—Lump, ℔ lb. .016@.017
Ground, ℔ lb. .0165@.0175
Powdered .04½@.05
Lump ℔ ton, Liverpool £5
Aluminum—℔ lb. .50
Aluminum Chloride—Pure, ℔ lb. $1.25
Amalgamating solution, ℔ lb. .60
Sulphate .01¾@.03
Ammonia—Sul., in bbl. lots, ℔ lb 03 1-16
Carbonate, ℔ lb., English and German .07¾
Muriate, white, in bbls., ℔ lb. .08½
Aqua Ammonia—(in cbys) 18° ℔ lb .03¾
20°, ℔ lb. .04¾
26°, ℔ lb .07½
Antimony—Oxymur, ℔ lb. .04¾
Regulus, ℔ ton, London £47@£49
Argols—Red, powdered, ℔ lb. .15
Arsenic—White, powdered ℔ lb. 02¾@.03
Red ℔ lb. .05@.035
Yellow .03@ 09
White at Plymouth, ℔ ton £12 2 6
Asbestos—Canadian, ℔ ton $50@$300
Italian, ℔ ton, c. i. f. L'pool £18@£60
Ashes—Pot, 1st sorts, ℔ lb. 04¾@.05
Pearl .06@.06¾
Asphaltum—
Prime Cuban, ℔ lb. .01@.05½
Hard Cuban, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00
Egyptian, ℔ lb. .08@.09
Californian, at mine, ℔ ton $12.00
at San Francisco, ℔ ton. $15.00
Barium—Carbonate, pure, ℔ lb. .45
Carbonate, commercial, ℔ lb .03@.10
Chlorate, crystal, ℔ lb. .75
Chloride, commercial, ℔ lb. .05@.10
pure, ℔ lb. .16
Iodide, ℔ oz. .40
Nitrate, powdered, ℔ lb. .15
Sulph., Am. prime white, ℔ ton. $21@$23
Sulph., foreign, floated, ℔ ton $21.5@$23.50
Sulph., off color, ℔ ton $11.50@$14.00
Carb., lump, f. o. b. L'pool, ℔ ton £6
No. 1, Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " £3 15 0
Bauxite—℔ ton $10.00
Bichromate of Potash—Scotch, ℔ lb. .10@.12
American, ℔ lb. .03½@.10
Bichromate of Soda—℔ lb. .08½@.11½
Borax—Refined, ℔ lb., in car lots .08¾@.09
San Francisco .08¾@.09
Concentrated, in car lo's. .08@.08¼
Refined, Liverpool ℔ ton £29
Bromine—℔ lb. .23@.25
Cadmium Minion—℔ lb. $2.00
Cadmium Iodide—℔ lb. $5.50
Chalk—℔ ton $1.75@$2.00
Precipitated, ℔ lb. .05@.06
China Clay—English, ℔ ton. $13@$18.00
Southern, ℔ ton $13.50
Chlorine Water—℔ lb. .10
Chrome Yellow—℔ lb. .10@.25
Chrome Iron Ore—℔ ton, San Francisco $10.00
Chromalum—Pure, ℔ lb. .40
Commercial, ℔ lb. .12
Cobalt—Oxide, ℔ lb. $2.50@$2.90
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary. .03¾@.04
" " extra .04½
Nitrate, ℔ lb. .40
Copperas—Common, ℔ 100 lbs. .85
Best, ℔ 100 lbs. .85@$1.00
Liverpool, ℔ ton, in casks £2
Corundum—Powdered, ℔ lb. .04½@.09
Flour, ℔ lb .03
Cryolite—Powdered, ℔ lb., bbl. lots. .07
Emery—Grain, ℔ lb. (℔ kg.) .04½@.05
Flour, ℔ lb. .02½@.10
Epsom Salt—℔ lb. .01½
Feldspar—Ground, ℔ ton $11.00
Crude $5.25
Fluorspar—Powdered, No. 1, ℔ ton. $30.00
French Chalk—
Fuller's Earth—Lump, ℔ bbl. .90@.95
Glauber's Salt—in bbls., ℔ lb. .0075
Glass—Ground, ℔ lb. .10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. s. v., ℔ doz. $5.50
Chloride and sodium, ℔ oz. $6.00
15 gr., c. v., ℔ doz. $2.88
Oxide, ℔ oz. $27.25
Gypsum—Calcined, ℔ bbl. $1.25@$1.50
Land Plaster
Iodine—Resublimed. $3.35@$4.00
Iron—Nitrate, 40°, ℔ lb. .01½
47°, ℔ lb. .02½

Kaolin—*See China Clay.*

Kieserite—℔ ton $9@$10
Lead—Red, ℔ lb. .06¾@.07½
White, American, in oil, ℔ lb. .03¾@.07½
White, English, ℔ lb., in oil .08½@.08¾
Acetate, or sugar of, white .12@.13
Granulated
Nitrate .09@.10
Lime Acetate—Am. Brown, $1.00@$1.05
" Gray, $1.75@$1.87½
Litharge—Powdered, ℔ lb. .06½@.07½
English flake, ℔ lb. .09@.09½
Magnesite—Crude, ℔ ton of 1,015 kilos $11 75
Calcined, ℔ ton of 1,015 kilos. $23.75
Brick, ℔ ton of 1,015 kilos. $50.00
Manganese—Ore, per unit. .23@.28
Oxide, ground, per lb. .02½@.06¼
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. .84
Powdered, ℔ lb .94
Marble Dust—℔ bbl $1.25
Metallic Paint—Brown ℔ ton. $20@$25
Red $20@$25
Mineral Wool—Ordinary slag. .01½
Ordinary rock .02½
Ground, ℔ ton
Mica—In sheets according to size.
1st quality, ℔ lb. .25@$6.00
Naphtha—Black
Nitre Cake—℔ ton $10.00
Ochre—Rochelle, ℔ lb. $1.50@$1.55
Washed Nat Oxi'rd, Lump, ℔ lb. 03¼@.05¾
Washed Nat Oxi'rd, Powder, ℔ lb. .07@.07½
Golden, ℔ lb. .03¾@.04
Domestic, ℔ lb. .01¼@ 01½
Oils, Mineral—
Cylinder, light filtered, ℔ gal. .15@.20
Dark filtered, ℔ gal. .12@.15
Extra cold test, ℔ gal. .18@.20
Dark steam refined, ℔ gal. 1C@.18
Phosphorus—℔ lb. .55@.60
Precip., red, ℔ lb. .88
white, ℔ lb. .93
Plumbago—Ceylon, ℔ lb. .01@.05
American, ℔ lb. .05@.07
Potassium—Cyanide, ℔ lb., C. P. .70
67%, ℔ lb .... .45
50%, ℔ lb. .40
Bromide, domestic, ℔ lb. .23@.25
Chlorate, English, ℔ lb. .10½@.11
Chlorate, powdered, English, ℔ lb. .10¼@.10¾
Carbonate, ℔ lb., by casks, 82% .01¼@.05¾
Caustic, ℔ lb., pure slick. .06¾@.07¼
Iodide, ℔ lb. $2.58@$2.63
Nitrate, refined, ℔ lb. .06@ 08
Bichromate, ℔ lb .095@.10
Yellow Prussiate, ℔ lb. .23½@.24¼
Red Prussiate, ℔ lb. .40@.45
Pumice Stone—Select lumps, lb. .01@.12
Original cks., ℔ lb. .01¼@.02
Powdered, pure, ℔ lb. .01¾@.02¼
Pyrites—Non-cupreous, p. units. .12@.15
Quartz—Ground, ℔ ton $12.50@$17.50
Rotten Stone—Powdered, ℔ lb. .03½
Lump, ℔ lb .06@.10
Original cks., ℔ lb. .01¼@.05½
Rubbing stone, ℔ lb .07
Sal Ammoniac—lump, in bbls., ℔ lb. .80¾
Salt—Liverpool, ground, ℔ sack .70
Domestic, fine, ℔ ton $7@$7.50
Common, fine, ℔ ton $4.50@$5
Turk's Island, ℔ bush .26@.28
Salt Cake—℔ ton $10.00
Saltpeter—Crude, ℔ lb. .03¾@.04¼
Soapstone—
Sodium—Prussiate, ℔ lb. 17½@ 18
Phosphate, ℔ lb. .07@.18
Stannate, ℔ lb. .08@.15
Tungstate, ℔ lb.
Hyposulphite, ℔ lb., in casks. .0235@.0245
Strontium—Nitrate, ℔ lb. .09½@.10
Sulphur—Roll, ℔ lb. .02½
Flour, ℔ lb. 02¾
Sylvinit, 23@27%, S.O.P., per unit. 40@.42½
Talc—Ground French, ℔ lb. .01¼@ 01½
Terra Alba—French, ℔ lb. .90@$1.00
English, ℔ lb .50@.60
American, No. 1, ℔ lb. 1.00
American, No. 2, ℔ lb. .40@.50
Tin—Crystals, in kegs or bbls. .11@.15
feathered or flossed. .25
Muriate, single .07
Double or strong, 51° B. .09
Oxy, or nitro .10
Tin Plates, ℔ box, Swansea, best charcoal .18@.19
best coke .15@.16
Vermillion—Imp. English, ℔ lb. .90@.95
Am. quicksilver, bulk .65
Am. quicksilver, bags .68 @ .72
Chinese .95 @$1.00
Trieste .90 @ .95
American .11½@ .13
Artificial .08 @ .35
Zinc White—Am., Dry, ℔ lb 04¼@ 05
Antwerp, Red Seal, ℔ lb. .07½
Paris, Red Seal, ℔ lb. .07½@.07¾
Muriate solution .06
Sulphate crystals, in bbls., ℔ lb. .0¾

CURRENT PRICES.

THE RARER METALS.

Arsenic—(Metallic), per lb .40
Barium—(Metallic), per gram $1.00
Bismuth—(Metallic), per lb. $2.40
Cadmium—(Metallic), per lb. $1.00
Calcium—(Metallic), per gram $10.00
Cerium—(Metallic), per gram. $7.50
Chromium—(Metallic), per gram. $1.00
Cobalt—(Metallic), per lb. $6.00
Didymium—(Metallic), per gram. $9.00
Erbium—(Metallic), per gram $7.50
Gallium—(Metallic), per gram $140.00
Glucinum—(Metallic, per gram $12.00
Indium—(Metallic), per gram. $9.00
Iridium—(Metallic), per oz. $7.00
Lanthanum—(Metallic), per gr. $10.00
Lithium—(Metallic), per gram $10.00
Magnesium—(Powdered), per lb. $1.00
Manganese—(Metallic), per lb. $1.10
Chem. pure, per oz. $10.00
Molybdenum—(Metallic), per gm .50
Niobium—(Metallic), per gram $5.00
Osmium—(Metallic), per oz. $65.00
Palladium—(Metallic), per oz. $35.00
Platinum—(Metallic), per oz., $16.50@$20.00
Potassium—(Metallic), per lb. $8.00
Rhodium—(Metallic), per gram $5.00
Ruthenium—(Metallic), per gm. $5.50
Rubidium—(Metallic), per gram $2.00
Selenium—(Metallic), per oz. $1.80
Sodium—(Metallic), per lb. $2.50
Strontium—(Metallic), per gm. .60
Tantalum (Metallic), per gram. $9.05
Telurium—(Metallic), per lb. $5.00
Thallium—(Metallic), per gram .20
Titanium—(Metallic), per gram $2.20
Thorium—(Metallic), per gram $17.00
Tungsten—(Metallic), per lb. $1.00
Uranium—(Oxide), per lb. $5.00
Metallic, per gm. .20
Vanadium—(Metallic), per gm. $22.00
Yttrium—(Metallic), per gram $9.00
Zirconium—(Metallic), per oz. $65.00

BUILDING MATERIAL.

Bricks—Fronts, nominal, ℔ 1,000.
Croton 14.00@.
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore @35.00
Building Stone—Amherst freestone, ℔ cu. ft. .80@ 90
Brownstone, Portland, ℔ cu. ft. 1.00@1.10
Granite, rough, ℔ cu. ft. .45@ .75
Cement—Rosendale, ℔ bbl. .85@1.10
Portland, American, ℔ bbl. 2.25@2.45
Portland, foreign, ℔ bbl. 2.40@2.50
Portland, " special brands 2.60@2.85
Roman, ℔ bbl. 2.75@2.90
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.25@8.50
Slate—Purple and green roofing, ℔ square 7.00@7.50
Red roofing, ℔ square 12.00@15.00
Black roofing, ℔ square 4.25@5.50
Lime—St. Johncom and finish., ℔ bbl .90@.95
Glens Falls, com. and fin., ℔ bbl. 85@1.15

NEW YORK PRICES CURRENT DECEMBER 5, 1891.

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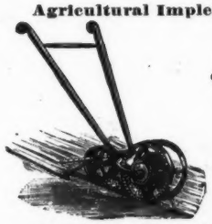
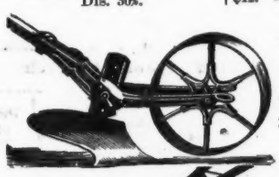
Discounts are for Wholesale Export Only.

Agricultural Implements.



"Planet, Jr." No. 2 Seed Drill, $9. Dis. 30%.

Combined Drill Cultivator Rake, Plow, etc., $12. Dis. 30%.



"Fire Fly" single-wheel Hoe, Cultivator and Plow, $5.

"Fire Fly" Hand Plow, $2.50.

30 % discount, f.o.b. New York.

All Steel Horse Hoe and Cultivator combined, with wheel, $6 75-100 net.

All Steel Plain Cultivator.

With wheel, $4.50;

without wheel, 60c.

HAY FORKS.

Standard Spading Forks.
Solid Steel Shanks, Gold Bronze Finish, Patent Overcaps.
Per doz.

8 D 4 light angular tine, iron D, plain ferrules, $17.00.
8 D S 4 light angular tine, iron D, strapped ferrules, $18.50.
11 D 4 light angular tine, iron D, plain ferrules, blue, half polished, $16 00.
13 D 4 light angular tine, iron D, strapped ferrules, blue, half polished, $17.50.
15 D 5 tine, angular tine, iron D, plain ferrules, $24.00.
17 D 5 tine, angular tine, iron D, strapped ferrules, $25.50.

Flat Tines.

D 4 tine spading fork, flat tine, iron D, plain ferrules, $17.00.
D S 4 tine spading fork, flat tine, iron D, strapped ferrules, $18.50.

74 4 tine spading fork, flat tine, 4 ft. handles, plain ferrules, $16.00.
74 S 4 tine spading fork, flat tine, 4 ft. handles, strapped ferrules, $17.50.
Dis., 60 and 10%

Manure Forks.

4 D, oval, 4 tine, 13 in. tine, iron D, plain ferrules, $13.50.
4 D S, oval, 4 tine, 13 in. tine, iron D, strapped ferrules, $15.00.
5 D, oval, 5 tine, 13 in. tine, iron D, plain ferrules, $20.50.
5 D S, oval, 5 tine, 13 in. tine, iron D, strapped ferrules, $22.00.
6 D oval, 6 tine, 13 in. tine, iron D, plain ferrules, $23.50.
6 D S, oval, 6 tine, 13 in. tine, iron D, strapped ferrules, $25.00.
Dis., 60 and 10%.

PLOWS.

Reversible Oneonta Clipper.

16. Oneonta Clipper, Reversible, Iron beam Cutter..... $14
" Oneonta Clipper, Reversible, Iron Wheel and Cutter..... 15
18. Oneonta Clipper, Reversible, Iron Beam Cutter 15
" Oneonta Clipper, Reversible, Iron Beam, Wheel and Cutter 16
Hard Metal, Reversible, Iron Beam Cutter..... ...
17. Hard Metal, Reversible, Iron Beam, Wheel and Jointer..... 17
19. Hard Metal, Reversible, Wood Beam Cutter..... 16
" " " " " " Wheel and Jointer..... 17
20. Steel Mould Board, Reversible, Wood Beam Cutter 15
" " " " " " " Wheel and Cutter..... 16

Iron Beam Plows.

Two-horse Sod and Stony Land.... 8.50 plain.
Curtis's Sod Two horse..... 11.5C "
" " " " ..... 13.00 cutter.
" " " " ..... 14.25 wheel & cutter.

Subsoil Plows.

Two-horse 9.50 Draft Rod.
" " 11.00 Wheel and Draft Rod.

Hitchcock's Potato Digger and Shovel Plow.

Improved adjustable handle shovel plow..... 7.00
Hitchcock's Potato Digger..... 8.00
" " " and shovel plow..... 10.50
Dis. 30%.

HOES.

Blade Solid Shank Hoes.

Field, 7 × 5 in., selected handles..$8.00
" 7½ × 4½ " " " .. 8.00
" 8 × 4¾ " " " .. 8.00
" 8¼ × 4¼ " " " .. 8.00
" 8 × 5 " " " .. 8.00

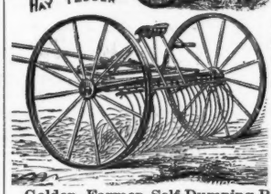
Field Socket Hoes..... $9.00

Dis., 65% and 5%.

RAKES.

The S. R. N. Improved.

20 Teeth $28.00
22 " 29.00
24 " 30.00
26 " 31.00
Dis., 33⅓%.



Chieftain Lock Lever
No. 1.....$16.00
No. 2. ..... 16.00
No. 5..... 15.00
Iron wheels, $1 extra.
With Pole, Double Tree and Neck Yoke, $1 extra.
22 cubic feet packed, 400 lbs. gro., 225 lbs. net.

Golden Farmer Self-Dumping Rake, $19.00; 22 cu. ft., 430 lbs. gro., 250 lbs. net.
Chieftain Hay Tedders, $27.00; 700 lbs. gro., 450 lbs. net.
Potato Diggers, $5.00; 100 lbs. gro., 60 lbs. All net cash, f.o.b. ship New York or Boston.

RAKES (GARDEN).

Malleable Iron Garden Rakes, Per Doz.

	Plain.
8 teeth, 6-ft. handles, straight shank	$5.00
10 " " " " "	5.50
12 " " " " "	6.00
14 " " " " "	6.50
16 " " " " "	7.00

For braced goods, add 50 cents per dozen to list.

Cast Steel Garden Rakes, Per Doz.

	Plain.	Braced.
8 teeth, 6-ft. handles	$8 00	$9.50
10 " " "	9.00	10.50
12 " " "	10.00	11.50
14 " " "	11.00	12.50
16 " " "	12,00	13.50

Lawn Rakes and Gravel Rakes same price as Garden Rakes.
Discounts on Rakes from list.
The P. H. & M. Co., 60 and 10%.
W. & C. Mfg. Co., 70%.
S. F. & T. Co., 70 and 5%.
G. T. Co., 70 and 5%.
Phila. S. H., 60, 10 and 5%.

SCYTHES (GRASS).

Waldron's pattern, oiled..... $5.50
Silver steel, painted..... 6.50
Western dutchman, bronzed and painted..... 7.00
Clipper, polished web..... 9.00
Fine cutlery steel, full polished..... 10.00
All steel, full polished..... 11.00

Grain Scythes.

Waldron's pattern, oiled..... 11.25
Silver steel, painted..... 11.25
Clover, oiled..... 11.25
Clipper, bronzed and painted..... 11.50

Lawn Scythes.

Clipper, bronzed and painted..... 9.0
Dis., 40 and 10%.

SOWER, BROADCAST SEED.

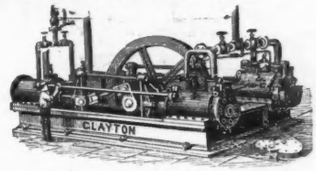
Per dozen..... $30 f.o.b

Gross wt., 110 pounds per dozen

Net wt., 75 pounds per dozen.

Air Compressors.

Clayton Duplex Air Compressors.



Special design for export. Shipping weight, 8,000 lbs. No one piece weighing over 300 to 400 lbs. Size No. 3½. Steam cylinders, each 12 in. diameter; air cylinders, each 12 in. diameter, and stroke, 13 in.; capacity, six 3 in. rock drills. Price, $3,000 f.o.b. New York. Dis., 20%.

Anvils.

Eagle anvils.

	Weight about			Weight about	
No. 000.....	½ lb.	$1.00	No. 4.....	40 lbs.	$4.25
" 00.....	4 "	1.75	" 5.....	50 "	5.00
" 0.....	10 "	2.25	" 6.....	60 "	5.50
" 1.....	15 "	2.75	" 7.....	70 "	6.00
" 2.....	20 "	3.00	" 8.....	80 "	7.00
" 3.....	30 "	3.75	" 9.....	90 "	8.00

Anvils weighing 100 to 800 lbs., 10 cts. per lb. Discount 15 and 10 %.

Arms and Ammunition.

	Wood Powder. Kegs, 25 lbs.	¼ kegs. ½ keg.	6¼ lbs. cans
Trap for first quality arms only.....	$19.50	9.85 trap. 8.60 let'd	5.00 .85
A, for large bore.....			
C, for general use.....			
D, fine for small bore and rifles.....	17.00		4.35 .75
E, very fine for small bore rifles and gallery shooting.....			

Dis., 20-5 and 5%

	Discount. Per cent.	
Bullet Breech Caps.....per lb.	1.60	10
Conical Bullet Caps..... "	1.75	10
	Discount. Per cent.	
Rim Fire Cartridges.....	60	10
Military Rim Fire Cartridges.....	15	10
Central Fire Pistol and Rifle Cartridges..	40	10
Central Fire Metallic Cartridges for Target and Sporting Rifles.....	30	
Military Cartridges, Central Fire.....	30	10
Lefaucheux Cartridges.....		60

	Special.
Gatling Cartridges.....	
Primed Shells and Bullets.....	25
Friction Cannon Primers.....	20
Primers.....	
Percussion Caps, F. C .....per M.	33c.
U. M. C..... "	42½c.
Musket..... "	45c.
Brass Shot Shells, U. M. C., 1st qual.....	60
Club brand.....	65

Paper Shot Shells.

14, 16 and 20 ga. First quality, 30, 10 and 10 per cent; 4, 8, 10 and 12 ga., First quality, 25, 10 and 10 per cent.
14, 16 and 20 ga. Club brand, 30, 10 and 10 per cent.
10 and 12 ga. Club brand, 33⅓, 10 and 10 per cent.
Gun Wads, 20 and 10 per cent.

RIFLES.

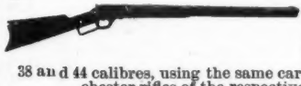
Colts' Lightning Magazine.

Discount 10 per cent.

40/60 and 45/60 calibre octagon barrel...	10	lbs.	$15.38
" " " " round " ...	9¾	"	14.25
" " " " carbine " ...	9	"	14.25
32, 38, and 44 calibres, octagon " ...	7¼	"	13.50
" " " round " ...	6¾	"	12.38
" " " " carbine " ...	6¼	"	12.38
" " " " baby carbine.....	5¼	"	12.38
22 calibre, rim fire, octagon barrel.....			15.38
" " round.....			14.25

Remington Light (Baby) carbines. 44 cal., blue, $8; nick. $8 50. Dis., 5%.

MARLIN RIFLE. MODEL, 1889.



The best in the market, embodying all latest improvements.

38 and 44 calibres, using the same cartridges as Winchester rifles of the respective sizes.

Octagon barrel,	24 inch,	6½	lbs.....	$19.50
"	26 "	6¾	"	21.50
" "	28 "	7	"	23.50
Round "	24 "	6½	"	18.50
Carbine	20 "	5½	"	17.50

Discount, 25, 10 and 10%.

REVOLVERS.

S & W.

32, Single Action 3, 3½ in., $8.00.
32, Double Action, 3, 3½ in., $9.35.
32, Safety Hammerless, 3, 3½ in., 11.00.

38, Single Action, 3¼ in., $9.40; 38, Single Action 4 in., $9.65; 38, Single Action, in., $10.00 : 38, Double Action, 3¼ in., $10.40; 38, Double Action, 4 in., $10.65; 38, Double Action, 5 in., $11.00; 38, Safety Hammerless, 3¼ in.,

$12.00; 38, Safety Hammerless, 4 in., $12.25; 38, Safety Hammerless, 5 in., $12.50; 44, Single Action, 4 in., $11.50; 44, Single Action, 5 in., $11.75: 44, Single Action, 6, 6½ n $12.00; 44, Double Action, 4 in., $12.50; 44, Double Action, 5 in., $12.75; 44, Double Action, 6½ in., $13.00; 44, D uble Action Favorite, 5 in., $12.75.

Colts.

Discount, 10 per cent from following prices.

Double Action Army, 44 and 45 calibre, 4¾, 5½, 7½ inch bbl., $13.00.
Double Action, 41 calibre, 2½ to 6 inch bbl., $11.20.
" " 38 " 2½ to 6 " " $10.00.
Single " Army, 45 calibre, 4¾, 5½, and 7½ inch bbl., $12.00.
Single Action Army, 44 calibre, "Frontier," 4¾, 5½, and 7½ inch bbl., $12.00.
New Line 32, $4.00.
" " 30, 2.00.
" " 22, half or full plate, 2.10.
Old Model, 22 calibre, by the hundred, half or full plate, $1.50.
Colt Deringer. 41 calibre, per pair half or full plate, 5.50.
National Deringers, 41 calibre, per pair, half or full plate, $4.00.
New Police, 38, 4½ in., nickeled, $6.66.

American Bull Dog

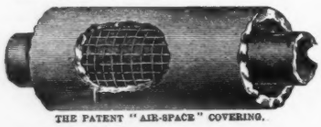
Double Action 32, 38 and 44 calibre, 2½ inch barrel, $1.60; Double Action 32, 38 and 44 calibre, 4½ inch barrel, $1.85; Double Action 32, 38 and 44 calibre, 6 inch barrel, $2.10 net.

F. & W. British Bull Dog revolvers, 32 and 38 calibre 2½ inch bbl., $1.85 net.
F. & W. Automatic revolver, 32 and 38 calibre, 3½ inch bbl., $4.00 net.
H. & R. Automatic revolver, 32 and 38 calibre, 3½ inch bbl., $3.75 net.

		Net.
Defender revolvers, Single Action,	22, wood handle,	65.
" " " "	22, rubber "	70.
" " " "	32, wood "	85.
" " " "	32, rubber "	90.

Remington Army revolver, Single Action, 44 cal., frontier cartridge, 5¾ inch barrel, $6.50.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 7½ inch barrel, $6.00.
Remin gton Double Deringers, 41 cal., rim fire, $4.05.

Asbestos Goods.

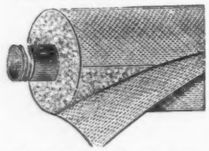


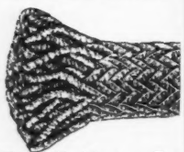
THE PATENT "AIR-SPACE" COVERING.

Patent air-space coverings. Per sq. ft., 25c. Discount, 20%.

Wick packing, per pound, 45c. Discount, 10%.

Removable pipe coverings. } See list. Sq. ft. 20c. Disc., 25%.





Fire felt covering for steam pipes. Per sq. ft., 25c. See list. Discount, 25%.

Piston Packing. Per pound, 45c. Discount, 10%.

Asbestos Fibre for filtering	per	lb.	40c. disc	20%
" Cord 95c., and Sewing Twine, $1.35				
Asbestos cloth, 36 inches wide	per	yard	2.25 "	10%
" cement for boilers	per	bbl.	3.25 "	10%
" sheathing	per	lb.	.12½ "	10%
" building felt	"	"	.10½ "	10%
" hair felt for hot and cold water pipes	per sq. ft		See spec. list.	
Asbestos mill board	per	lb.	.12½ "	10%
" soldering blocks	per	doz.	See list.	

Assay Furnace.

Hydro-Carbon Blow-Pipe Assay Furnace.

No. 2, Muffle Furnace taking C Battersea Muffle 8x4¾x3 in. $10.00
No. 3, taking F Muffle, 10x6x4 in. 15.00
No. 1, Crucible Furnace, taking Battersea, U or Colorado B Crucible, 4 in. dia. 5½ deep. 4.00
No. 2 taking Batter-
As E, round, 5 in. dia., 6½ deep. $5.00
Blow-Pipe No. 2, with half gallon tank, made entirely of seamless brass. 23.00
Blow-Pipe No. 3, with one gallon tank, otherwise same as No. 2. 26.00
Blow-Pipe No. 2, Muffle Furnace No. 2, and Crucible Furnace No. 1. 37.00
Blow-Pipe No. 3, Muffle Furnace No. 3, and Crucible Furnace No. 2. 46.00

25% f. o. b. New York on wholesale orders.

Axes, etc.

Axes, Handled.

Brands,	Collins. doz.	Sharp. doz.	Pecks. doz.
Dis., %	10	35	Net
3½@4½ lbs.	$10.75	$15.00	9.50
4½@5¼ lbs.	11.00	15,50	9.50
4¼@6 lbs.	11.50	16.00	10.00
5@7 lbs.	12.50	17.50	11.00

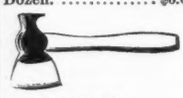
Brands,	Hurd. doz. Net	American Ideal. doz. Net	Blair. doz. Net.	Freeman. doz. Net
3½@4½ lbs.	$8.50	$11.00	$8.00	$6.50
4½@5¼ lbs.	8.50	11.00	8.00	7.00
4½@6 lbs.	8.75	11.25	8.25	7.00
5@7 lbs.	9.00	11.50	8.50	7.50

Brands,	Collins. doz.	Sharp. doz.	Pecks. doz.
Dis., %	10	50	50 & 5
Three-quarter axe	$8.00	$13.50	$13.50	$13.50

AXE PATTERN. HUNTER'S.

Both patterns, same price.

	Collins.	Sharp.	Pecks.	Simmons.
Dis., %	10	50	50 & 5	50
Dozen	$6.00	$10.00	$9.00	$9.00



SHINGLING. CLAW.

Shingling.

Brands,	Collins.	Sharp.	Pecks.	Mann
Dis., %	10	50.5	50 & 5.	50.5
No. 1 Doz.	$4.75	$8.00	$8.00	$8.00
No. 2 "	5.25	8.50	8.50	8.50
No. 3 "	5,75	9.00	9.00	9.00

Claw.

Brands.	Collins.	Sharp.	Blair.	Mann
Dis., %	10	50, 5	60, 5	50, 5
No 1. Doz.	$5.25	$9.00	$9.00	$9.00
No. 2. "	5.75	9.50	9.50	9.50
No. 3. "	6.25	10.00	10.00	10.00

YANKEE, OR OHIO. PENNSYLVANIA. NEW ORLEANS.

Brands.	Collins.	Sharp.	Pecks.	Blair.	Mann.
Dis., %	10	50	50 & 5	60, 10	50
Dozen	$19.00	$32.00	$32.00	$32.00	$32.00

Handled, extra, $4.

Adzes.

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Hurd
RAILROAD. Dis., %	10	45	50	50	50, 50
Railr d, heavy, doz.	$14.00	$26.00	$26.00	$26.00	$26.00
Flat head "	15.00	24.00	24.00	24.00	24.00

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Hurd.
Dis., %	10	45	50	50	50, 100
Square head, doz.	$12.50	$24.00	$24.00	$24.00	$24.00

Brands.	Collins.	Hunt.	Sharp.	Pecks.
Dis., %	10	45	50	50
Ship Carpenter's or Spur Head, doz.	$13.00	$25.00	$25.00	$25.00

Brands.	Collins.	Hunt.	Sharp.
Dis., %	10	45	50
Cooper's, handled and bolted, doz.	$16.00	$27.00	$25.00

Axle Grease.

Frazer's (2-lb. tins), per gross	$18.00
2-lb. wooden boxes, "	12.00
Discount, 25 and 5 %.	
Dixon's Everlasting, boxes 1 lb., per doz.	$1.20
" " 2 lbs., "	2.00

See Oils, page 10.

Bellows.

Miner's Bellows 24 in., $8.50; 26 in., $9.75; 28 in., $11.00; 30 in. $11.25; 32 in., $13.50.
30 and 5% dis.

Standard, each 18 to 24 in., $10; 28 in., $12; 32 in., $14; 34 in. $16; 36 in., $18 38 in., $20; 40 in., $23; 42 in., $27; 44 in. $32
10 and 5% dis.

Hand Bellows, per doz.: 6 in., plain, $10; fancy, $20; 7 in., plain, $12; fancy, $24; 8 in., plain, $14; fancy, $28; 9 in. plain, $16; fancy, $32; 10 in. plain, $18; fancy, $36.
50% dis.

Belting.

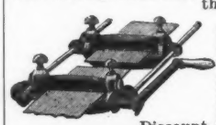
LEATHER BELTS.

Standard Manufacturers List.
Single belts per foot.
Double belts twice the price of single.
Dis. single and double belts, cemented, 50 and 5%.
Dis. single and double belts, riveted and cemented, 50 and 5%.
Dis. single belts, cemented and lacesewn, waterproofed, 50%.
Dis. double belts, cemented and lacesewn, waterproofed, 45%.

Width.		Width.		Width.	
1 inch	.10	7 "	.90	20 inch	2.84
1¾ "	.20	8 "	1.02	21 "	3.02
2 "	.23	10 "	1.29	22 "	3.20
2½ "	.30	11 "	1.42	24 "	3.54
3 "	.36	12 "	1.55	28 "	4.30
4 "	.50	14 "	1.82	30 "	4.64
4½ "	.56	15 "	1.98	34 "	5.35
5 "	.63	16 "	2.14	40 "	6.40
5½ "	.70	18 "	2.49	48 "	7.80
6 inch	.76	19 "	2.66		

Belt Clamp.

For Drawing Belts Together for the purpose of Lacing them.



8 inch	$14.00
12 "	18.00
16 "	10.00
20 "	20 00
24 "	30.00
28 "	34.00
32 "	38.00
36 "	44.00

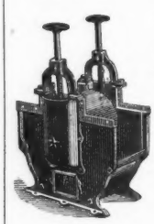
Discount, 30% and 10%.

Blowers and Disc Fans.

12 inches	$30	42 inches	$100
18 "	40	48 "	125
24 "	50	54 "	160
30 "	65	60 "	200
36 "	85		

Discount 35% and 2½ for cash.

Elevator Boots with Sprocket Wheels or Pulleys.



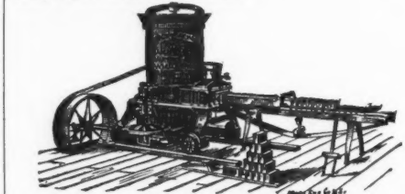
Diam. of pulley.	Length of bucket.	Price of cast iron boot.	Price of hard-wood boot.
12	5	$28.00	$28 00
12	6	30.00	30.00
14	7	35.00	35.00
14	8	40.00	40.00
16	9	45.00	45.00
16	10	50.00	50.00
18	12	60.60	60.00
18	14	66.00	66.00
18	16	70.00	70.00
20	18	85.00	85.00
20	20	90.00	90.00

Prices will be quoted on sizes not listed above.
Discount, 35%.

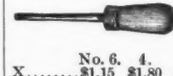
Brick Machinery.

Heavy Steam Power Machine	$525.00
Horse-Power Machines	300.00
Additional Horizontal Pugmill	22.0
Brick Moulds	$2.50 to $3.00
Brick Trucks	5.00 to 13.50
Brick Barrows	7.25
Brick Barrows with Springs	8.20
Sand Barrows, steel tray	6.40

Clay Working Machines.



		Capacity.	Price.
No. 20 A	brick machine	60,000 to 80M	$3,500
No. 20 B	" "	50,000	2,500
No. 15 D	" "	40,000	1,800
No. 10 D	" "	40,000	1,500
No. 15 S	" "	30,000	1,400
No. 10 S	" "	25,000	1,200
Upright stock	brick machine	25,000 to 30M	1,200
No. 7 S	brick machine	20,000	650
No. 6 S	" "	15,000	575
No. 2 E	" "	H. P. 5,000 to 8,000	400

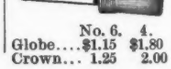


Brushes.

PAINT BRUSHES.

Intermediate prices not quoted.
Prices per dozen.

	No. 6.	4.	2.	0.	3-0.	5-0.	7-0.	Dis
X	$1.15	$1.80	$2.50	$3.15	$4.00	$5.25	$6.75	25%
Atlantic	1.25	2.15	3.80	5.25	7.00	10.00	13.00	25%
Standard	1.60	2.60	4.00	6.00	8.00	11.00	16.00	25%



VARNISH OVAL.

	No. 6.	4.	2.	0.	3-0.	5-0.	7-0.	Dis.
Globe	$1.15	$1.80	$2.50	$3.25	$4.60	$6.00	$8.00	25%
Crown	1.25	2.00	2.75	4.00	5.25	7.00	10.00	25%

VARNISH FLAT.

	No. 1.	1½.	2.	2½.	3.	Dis.
X..	$0.48	$0.72	$0.96	$1.20	$1.40	25%

SASH BRUSH.

	No. 1.	3.	5.	7.	9.	Dis.
X....	$0.25	$0.40	$0.60	$0.85	$1.20	25%
XX....	0.40	0.75	1.10	1.40	2.00	25%

WHITE-WASH.

	No. 6.	7.	8.	Dis.
Brown....	$1.25	$1.60	$2.00	25%
Pure.....	2.40	4.00	6.00	25%

SHOE.

Per gross.

8.	9.	25.	15.	26.	Dis.
10	$11.50	$12.50	$15	$18	25%

Per gross dis., 25%.

27.	32.	29.	35.
$20.00	$24.00	$28.00	$33.00

HORSE.

Patent.

Per gross, dis., 25%.

$18.00 $20.00 $24.00 $30.00

Per gross, dis.' 25%.

Wood back	$12	$15	$18	$24

Per gross, dis. 25%.

Leather back.	$24	$31	$50	$42 $54

SCRUB.

Patent.

Per gross, dis., 25%.

$12.00 $16.00 $18.00

Per gross, dis., 25%.

6.50	$8.50	$12	$14	$18

SHAVING.

Per doz., dis., 25%,

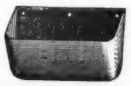
$0.36 $0.60 $1.00 $1.50 $2.50

COUNTER.

Per doz., dis., 25%.

$3.00 $4.00 $5.00

Elevator Buckets.



Malleable Iron Buckets. Suitable for Extra Heavy Work. For Coal, Ore, Broken Stone, etc.

Length.	Width.	Capacity in pints.	Price.
4½	3	¾	$0.40
6	4	1¼	50
7	4½	2¼	65
8	5	3¼	80
10	6	5½	1.10
12	7	8	1.50
14	6	9½	1.60
16	7	11½	2.00
16	8	13¾	2.25

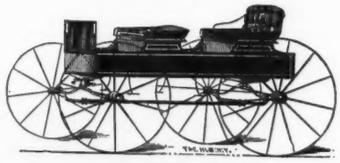
Discount, 45%.

Carriages, Etc.

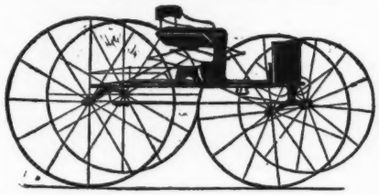
Windsor Surrey.
Open, $120.
Canopy top, $145.
Leather extension top, $185.
Pole or shafts.

Cut under Surrey.
Canopy top, $185.
Leather extension top, $220.

Brewster Spring.
Open, $55.
Rubber top, $76.
Leather top, $100.



Runabout, $65.



Buckboard. $30; shafts.

No. 0. Cart, top and fenders	$150
No. 1. Cart, top and fenders	90
No. 2. Cart, one man cart, open	65
No. 2. Cart, one man, top.	86
No. 2. Cart, one man, top and fenders	90
No. 3-H. Cart, two man, open	54
No. 4. Cart, two man, top.	86
No. 5. Cart, two man, top and fenders	90
No. 6. Cart, two men, top and fenders	90
No. 7. Two-man combination cart	110

Wide track 5 feet.
Narrow track 4 feet 8 inches.
Discount 33⅓ per cent. off.

Roller Chains.

Made of malleable iron, with malleable iron and steel pins.

These chains are made up with riveted pins, but coupling pins can be inserted at any interval desired.

The price of the chain includes the attachment links when not occurring but once in every foot.

No.	Working strain.	Pitch of link.	Width of link.	Size pin.	Price per foot.
52	500	1½	1⅝	16/16 Malleable iron	$0.35
55	500	1 3/5	1⅝	5/16 " "	.35
77	800	2¼	2	3/8 " "	.45
0	800	2	1½	5/16 " "	.45
9	700	3	1¾	3/8 " "	.50
88	1,200	2⅝	2⅛	7/16 " "	.65
17	1,200	2 9/16	2	7/16 " "	.70
18	1,400	3	2	½ " "	.80
12	1,500	3½	2 7/16	½ " "	.90
1	2,000	3	3	5/8 Steel.	1.20
2	1,600	3 11/16	2⅞	5/8 "	1.10
126	2,500	6	3⅛	11/16 "	1.30
103	1,800	3½	2¾	5/8 "	1.20
3	2,000	4	3¼	11/16 "	1.30
114	2,000	4⅜	3⅛	11/16 "	1.30
124	2,900	4	3⅜	¾ "	1.70
5	3,000	5	3¾	⅞ "	1.85

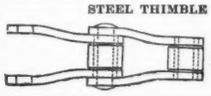
Discount, 45%.

Roller Carrier Chains.

No.	Working strain.	Pitch of link.	Size pin.	Price per foot.
21	700	2½ "	2/3 Malleable.	$ 40
22	1,000	3⅛ "	7/16 Steel.	65
23	1,400	4 "	5/8 "	90
24	2,800	6 "	⅞ "	.25

Disc.. 20%.

STEEL THIMBLE ROLLER CHAIN.



Is used extensively for heavy driving purposes.

No.	Work'g strain.	Sizes.					Pin.	Price
		Width of steel.		Thickness.		Pitch of link.		
17	1,800 lbs.	1⅛	x	¼	x	2⅝ ins.	½ in.	$1.65
14	3,500 "	1½	x	⅜	x	3⅛ "	⅝ "	2.15
112	6,000 "	2	x	½	x	4 "	¾ "	3.00
115	6,000 "	2	x	½	x	5 "	¾ "	3.00
116	6,000 "	2	x	½	x	6 "	¾ "	3.00

Disc., 20%.

MEY-OBORN DETACHABLE CHAIN BELTING.

Made in 22 sizes to work on Standard Sprocket Wheels.

No.	Links per foot.	Size pin.	Working strain.	Price per foot.	No.	Links per foot.	Size pin.	Working strain.	Price per foot.
25	13.3	3-16	75	.13	67	5.02	11-32	700	.30
33	8 6	7-32	200	.12	75	4.6	3-8	800	.35
34	8.6	7-32	225	.13	77	5.02	3-8	800	.35
35	7.4	15-64	250	.14	78	4.6	27-64	1,000	.40
42	8.75	1-4	300	.16	83	3.	33-64	1,200	.45
45	7.4	1-4	350	.16	85	3.	31-64	1,300	.50
50	12.	3-16	200	.17	88	4.6	15-32	1,200	.50
52	8.	19-64	500	.25	103	4.	37-64	1,800	.75
55	7.4	19-64	450	.22	108	2.55	5-8	2,000	.80
57	5.02	5-16	600	.24	146	2.	13-16	2,800	1.40
62	7.03	11-32	950	.30	124	3.	3-4	2,500	1.30

Disc. 25%.

Crucibles.

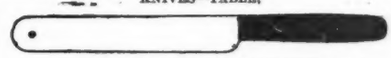
Battersea Crucibles, Triangular.

No.	Height. Inches.	Width. Inches.	Crucibles. Per doz.	Covers. Per doz.
S.....	4½	4½	$1.00	$0.50
T.....	4	3¾	0.80	0.50
U.....	3½	3¼	0.60	0.40
V.....	3¼	2⅞	0.45	0.40
W.....	2⅞	2⅝	0.35	0.30
X.....	2½	2¼	0.30	0.30
Y.....	2¼	2⅛	0.25	0.30
Z.....	1¾	1¾	0.20	0.30

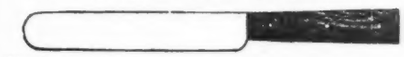
Battersea Muffles, any size, made to order.
See Illustration in advertisement.
Discount, 15%.

Cutlery.

KNIVES—TABLE.



Japanned iron handles, $10.70 per gross pairs.



Cocobola handles.	Ebony handles.	Bone handles.	
10.70	12.00	15.35	gross pairs.

32.00	33.35	38.00	"	"

34.70	36.00	48.00	"	"

Solid bone handles, 4.80 per dozen pairs.

Celluloid handles, 7.35 per dozen pairs.
Forks are made to match all above patterns, with either three or four prongs.
Discount 25 %.

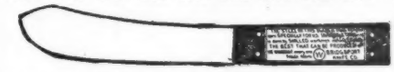
BUTCHERS'—COCOBOLA HANDLES.

Per dozen.

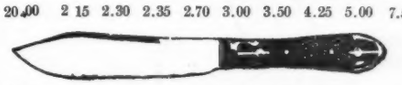
4 and 4½ in.	5 in.	5½ in.	6 in.	6½ in.	7 in.	8 in.	9 in.	10 in.	
1.15	....	....	1.20	....	...	....	....	....	....

1.15	1.20	1.30	1.40	1.70	1.90	2.35	3.00	3.70	5.00

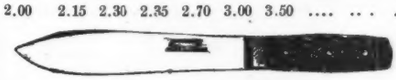
....	1.45	1.60	1.70	2.00	2.35	2.80	3.25	4.00	.00



20.00	2 15	2.30	2.35	2.70	3.00	3.50	4.25	5.00	7.50



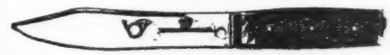
2.00	2.15	2.30	2.35	2.70	3.00	3.50	....	.. .	...



Discount 25 and 10 %.

HUNTING—EBONY HANDLES.

5½ in.	6 in.	6½ in.	7 in.	8 in.	9 in.
Per Dozen.					



2.70	3.00	3.20	3.55	4.00	5.00

2.55	2.70	3.00	3.30	3.55	4.00	5.00

Discount, 25 and 10 %.
Per Dozen.

Putty knives, cocobola handles..... ..... $1.30@$1.50

SHEARS.

TAILORS'—JAPANNED OR NICKEL HANDLES.

	Per pair.
12 in.....	6.00
12½ in.....	7.00
13 in.....	8.00
13½ in.....	9.00
14 in.....	10.00
14½ in.....	11.00
15 in..... 12.00 | 16 in.....	14.00

Discount, japanned, 60 %; nickle, 45 %.

BENT TRIMMERS.

Per dozen.

6 in.....	13.00	10 in.....	27.00
7 in.....	15.00	11 in.....	30.00
8 in.....	17.00	12 in.....	33.00
9 in.....	22.00		

PAPER AND BANKERS'.

Per dozen.

9 in...	18.00	13 in....	36.00
10 in...	25.00	14 in....	42.00
11 in...	27.00	16 in....	54.00
12 in...	32.00	18 in....	20.00

BARBERS—Per dozen.

7½ in.....	15.00	9 in.....	18.00
8 in.....	16.00	9½ in.....	20.0
8½ in	17.00		

SCISSORS.

BUTTON-HOLE.

5 and 5½in., 14.00 per dozen.

Disco nt, japanned, 70 and 10 % nickel, 60 and 10 %

PRUNING.

1 B., 9 in., 24 per dozen; 2 B. 8½ in., 21; 3 B., 7¾ in., 19.80.

PRUNING SHEARS FOR LONG HANDLES.

No. 1, $36 per dozen; No. $30 per dozen.

Discount, 40 and 5%.

Cutters.

FEED.

Prices, etc., on application.

VEGETABLE—GALE'S.

Size.	Weight of Fly Wheel. Pounds.	Will cut per hour. Pounds.	Price
No. 1½	20	1,500	$12
No. 2½	32	1,700	15
No. 3½	32	1,700	15
No. 4	42	2,000	18
No. 5	50	3,000	25
No 10	65	8,000	35

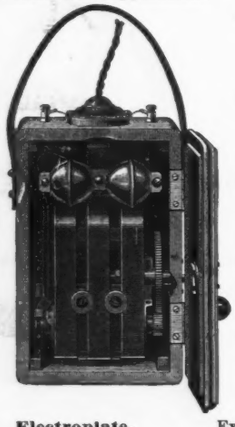
30% dis.

Drill—Portable Hand Rock.

Price, $225.

Dis., 25 and 2½%.

Electrical Appliances.



20,000 ohm Testing Generator..... $10.00

Pony Magneto Bell 6.00

Standard Magneto Bell 7.50

Standard Extension Bell 4.00

Pony Extension Bell..... 3.00

Discount 40 per cent.

Electroplate.

	Extra plate, per doz.	Double plate, per doz.	Triple plate, per doz.
Oyster forks	7.00	9.00	11.00
Sugar shells	9.00	11.00	13.00
Sugar tongs	25.50	31.50	37.50
Butter knives, twist or reversed handles	10.50	12.50	14.50
Nut picks	4.75	6.00	7.25
Pie knives, engraved blades	42.00	51.00	60.00
Soup ladles	48.00	60.00	72.00

Dis. 60 and 2%.

Aesthetic medium fork.

Tea spoons.	Table spoons.	Medium forks.
7.50	15.00	15.00 per gross.

Discount, 30 and 5 %.

Children's sets *on cards*.	3 pcs.	4 pcs.	
Leader pattern, as per cut	21.00	24.00 doz.	60 and 5%
Aesthetic pattern, as per cut	5.75	7.25 doz.	30 and 5%

SPOONS, FORKS, ETC., BEST PLATE ON HARD WHITE METAL

Tipped Tea Spoon.

Oval Tea Spoon.

Perfect Tea Spoon.

Leader Tea Spoon.

	5 oz. or extra plate—Tipd	Oval.	Perfect and Leader.
Tea spoons	4.25	4.50	4.75 per doz
Dessert spoons	7.50	8.00	8.50 " "
Table spoons	8.50	9.00	9.50 " "
Coffee spoons	4.25	4.50	4.75 " "
Dessert forks	7.50	8.00	8.50 " "
Medium forks	8.50	9.00	9.50 " "

Discount, 60 and 5%.

Spoons and forks, German silver, tipped pattern.

Tea spoons.	Table spoons.	Medium forks.
22.50	45.00	45.00 per gross.

Discount, 60 and 2½%.

Spoons and forks, made from brass, and silver plated or a coating of hard, white nickel.

CASTERS.

1,200—Dinner.

Dis., 60 and 5%. 232—Breakfast.

No. 146.

PICKLE DISHES

No. 144. 12 in. high, $3.50

No. 66. 10½ in. high, $4.50 sorted colored glass.

No. 155. 12 in. high, $4, sorted colored glass.

No. 146. 12½ in. high, $9; hand decorated glass.

No. 156, 12½ in. high, $6; hand decorated glass.

No. 255.

TEA SETS.

No. 255. 6 pieces, $35, quadruple plate.

No. 301. 4 pieces, $23, quadruple plate.

No. 1847. 6 pieces, $42, quadruple plate.

Dis., 60 and 5%.

Engineering Instruments.

Full Engineer's Standard Transit.

7 in. graduated circle			$255
6 in.	"	"	245
5 in.	"	"	235
4 in.	"	"	225

Standard Engineer's Level, improved centre and seat attachment, 18 in. telescope

Plain railroad level, 18 in. telescope

Dis., 5%.

Explosives.

Dynamite, 75%	Nitro-Glycerine, per lb		.32
" 60%	" " "		.25
" 40%	" " "		.20
Blasting powder A, per keg 25 lbs			$2.40
" B, " " "			1.90
Sporting powder, standard brands		per keg 25 lbs	5.00
" " "	" "	" 12½ lbs.	2.75
" " "	" "	" 6¼ lbs.	1.50
" " high grades	" "	" 6¼ lbs.	3.00
" " "	" "	per can 1 lb	.60
" " fancy brands	" "	" 1 lb	1.00

Discounts special for quantity.

Safety fuse, cotton, 12 M ft. in case			$2.85 per M
" " single tape, 6 M ft. in case			3.85 " "
" " double tape " "			4.85 " "
" " triple tape " "			5.60 " "

Discount 17½%.

Detonating caps, triple force, 25 M. in case $5.00 per M.

" " quintuple force, 25 M. in case 7.50 per M.

Electrical exploders, 4 ft. wires $3.00 per 100

" "	6	"	3.54 "
" "	8	"	4.08 "
" "	10	"	4.62

Discount 15%. Long lengths to order.

	No.	Capacity.	
Magneto Blasting Machines	1 V.	8 holes	$17.00
" " "	2 V.	20 "	25.00
" " "	3 L.	20 "	25.00
" " "	3 V.	30 "	30.00
" " "	4 V.	60 "	50.00

Discount 15%.

Blasting cables	$5.00 each,	discount 40%
" reels	5.00 " "	20%

Flouring Mill Machinery.

20-inch New Era Mill for Wheat, Corn, and Middlings.

Size. Inch.	Power. H. P.	Pulley. Inch.	Capacity. Bush.
20	4 to 10	14×7	12 to 40

Speed.	Weight. Lbs.	Price.
500 to 800	660	150

Farm and Plantations Mills.

Diameter of burrs.	Power to drive.	Size of pulley.	Capacity per hour.	Revolutions per minute.	Weight.	Price.
	H. P.					
14 in.	2 to 4	9×5½	4 to 14 bushels	600 to 1200	370 lbs.	$100
18 in.	4 to 10	11×6½	8 to 10 bushels	400 to 700	600 lbs.	130

GRINDING MILLS.

"Daisy," without Shaking Bolt, 170 pounds, 9 cubic feet, $40.

"Daisy," with Shaking Bolt, 185 pounds, 9 cubic feet, $48.

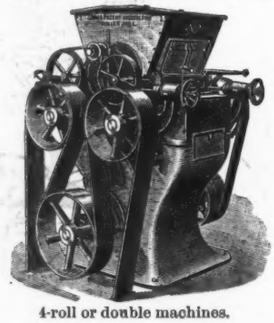
} Discount 25 per cent.

"The Union Mill."

Diameter of Buhr Stones	Size of Pulleys Diam.	Face.
12 in.	8 in.	6¼ in.
16 "	9 "	7½ "

Horse Power	Capacity in B'sh's	Speed	Without Bolt	With Bolt	Sacking Elevator, Extra	Extra Metal Buhrs
8 to 10	12 to 30	1200 to 1500	$90.00	$105.00	$15.00	$1.20 pair
10 to 15	20 to 50	1000 to 1600	160.00	178.00	17.50	1.50 "

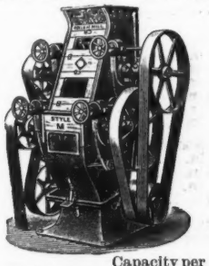
NOISELESS ROLLER MILLS FOR FLOUR MILL USE.



4-roll or double machines.

Size, inches.	Weight, lbs.	Price in New York, net. All smooth.	1 pair smooth, 1 pair corrugated.	All corrugated.
6×12	1,480	$302	$307	$312
6×16	1,680	334	339	344
6×20	1,860	357	372	377
9×14	2,800	377	383	390
9×18	3,500	406	414	422
9×24	4,150	455	466	477
9×30	5,850	510	525	539

NOISELESS ROLLER MILLS FOR CORN-GRINDING ONLY.



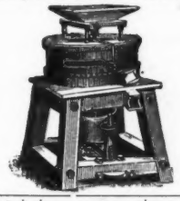
Size inches.	Weight lbs.	Capacity per hour bushels.	Price in New York
9 × 14	2,600	20 to 35	$390.
9 × 18	3,050	30 " 50	422.
9 × 24	3,350	40 " 80	477.

6 × 8 Corn Meal Roller Mill.....$85.

COMPLETE FLOUR MILLS ON THE ROLLER PROCESS.

Capacity in flour hours.	Power needed.	Weight approx. in lbs.	No. of estimate.	Net price in New York.
25 bbls.	20 h. p.	14,000	15	$2,200
40 "	22 "	22,000	D	2,400
50 "	25 "	32,000	C	3,200
75 "	35 "	48,000	B	4,700
100 "	45 "	60,000	A	5,500

The Nordyke Bradford Portable Mill.



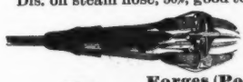
Size of stones, In.	Grinding capacity. Corn, bu. per hour.	Wheat bu. per hour.	Horse-power.	Weights. Sing'l gear.	Double gear.	Pulley mill.	Geared mills. Iron wh'ls.	Mortise wh'ls.
18	8 to 10	.....	4	550	625	$130	$165	$180
20	10 to 12	.....	5	600	700	140	175	190
22	12 to 15	.....	5	700	850	160	190	210
24	15 to 18	.....	6	900	1050	175	210	225
26	18 to 20	8 to 10	8	1200	1400	185	225	250
30	20 to 25	10 to 12	10	1500	1700	225	265	290
36	25 to 30	14 to 17	12	1800	2100	315	355	380
42	35 to 40	19 to 21	15	2000	2300	390	435	460

Driving pulley.	Revolutions per minute.	Length of belt above floor.	Approximate shipping weight	Price.
10" × 5¼"	400 to 500	14'	.....	$500.00
14" × 6¼"	350 to 450	18'	2600 lb.	600.00
14" × 7¼"	350 to 450	18'	3050 lb.	650.00
14" × 8¼"	350 to 450	18'	3350 lb.	735.00

Flue Cleaner.
Hurley's Automatic Steam Flue Cleaner.

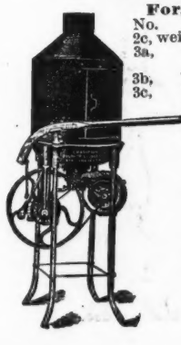
No.	Outside diam. of tubes.	With hose clamps.	Globe Valves.	Best 4-ply steam hose. Per foot.
1	1½ to 2	$5.00	½, 95 cents	¾, 67 cents.
2	2 to 2½	6.25	½, 95 cents	¾, 67 cents.
3	2½ to 3	7.50	¾, $1.30	¾, 67 cents.
4	3 to 3½	8.75	1, 1.75	1¼, 83 cents.
5	3½ to 4½	10.00	1¼ 2.90	1¼, $1.04

Dis. on flue cleaners, 60 and 10%.
Dis. on steam hose, 50%, good to 90 lbs steam.



Tube cleaner, "The National." Per inch, $1. Discount, 60%.

Forges (Portable).



No.
2c, weight, 155 lbs. 21×27 hearth ..$42.00
3a, " 80 " 18 in. diam. hearth..... 27.00
3b, " 75 " 18 " 24.00
3c, " 85 " 18 " 30.00
No. 6a, weight 45 lbs., 14 in. diam. hearth..... 18.00
No. 6B, weight 45 lbs. 14 in. diam. hearth..... 16.00
Dis. 60%.

No. 1, half open hood; height 29 in.; fan, 10 in.; hearth, 21×27 in.; weight, 140 lbs.; price, $40.
No. 2, closed hood; capacity same as No. 1; weight, 150 lbs.; price, $12.
No. 4, half open hood; height, 33 in.; size of hearth, 18 in. diameter; weight, 75 lbs.; price, $27.

Nos. 4 and 5 will produce a welding heat on iron 1½ inches in diameter in five minutes, and do heavier work if required, but on account of size of fire place and general capacity, are specially recommended for use of die sinkers, model and tool makers, plumbers, tinsmiths, jewelers, dentists, locksmiths and small hardware manufacturers, for heating and tempering tools of all kinds.
No. 5, same size and capacity as No. 4; weight, 60 lbs. Price, $24.
Discount on application.

Fruit Evaporator.

No. 1. Evaporator..... $30
No. 2. Fruit Drier and Baker, with Bleacher attachment. Weight, 225 lbs. Capacity, 5 to 7 bushels apples per day; 24 in. deep, 26 in. wide, 5½ ft. high; 12 trays, 22 × 22; 40 square feet drying surface. Complete..... ..... $50
No. 3. Capacity, 15 to 20 bushels per day..... 100
No. 4. Capacity, 20 to 30 bushels per day..... 165
Dis., Nos. 1 and 2 = 25%. Nos. 3-4 = 20%.
Boxing, extra:
No. 1, $3.00; No. 2, $5.00; No. 3, $7.50; No. 4, $12.50.
Freight to New York:
No. 1, $4.00; No. 2, $6.00; No. 3, $12.00; No. 4, $18.00.

Gaskets.

Corrugated Copper.
Price, 2 cents per square inch, less 30 per cent. discount for home trade.
Less 60% discount for export trade.

The Engineer Gauge Glass Cutter.

Price $1.50. 25%.

Glass Tube Cutters.

One Arm Carries Rotary Cutter Price, $2.50 each.

Glassware. Dis. 5%.

6-in bowl and cover, per doz.....$2.75
7-in " " " 3.75
8-in. " " " 5.00
9-in. " " 7.00
10-in " " 9.00

12

13 15

13. Nappy, 4½-inch., per doz., 50c.; 6-inch., per doz., $2; 8-inch., per doz., $4.
14. Cream Pitcher, 1 pint, per doz., $1.25; one quart per doz., $2.75; 3 pints, per doz., $4.00.
15. Pint Pitcher, per doz., $1.50; quart pitcher, per doz. $2; 3 pint pitcher, per doz., $3.00.

16

17

16. Flange Butter and Cover, per doz., 1.50.
17. Wateer Set, per doz., sets of 60 pieces, $7.50.

18

19 20

21

18. Cheese Dish and Cover, 8 in. per doz., $4.50.
20. Quart Water Bottle, per doz., $4.50.
19. Ind. Salts; per gross, $2.00. Assorted patterns.
21. 4 Bottle Castors, per doz., $6.50; 3 bottle, per doz. $4.50.

25

26 27

25. Candlesticks, per doz., $1.75. 26. Glass Slipper and tray for Flowers. per doz., $1. 27. Jam Jar and Cover 1 qt., per doz., $2.50; ½ gal., per doz., $3.25; ¾ gal., per doz., $4; 1 gal., per doz., $5; 1½ gals., $9; 2 gals., per doz., $12. 28. Pocket Flask, 1 pint, $1.

Assd. tumblers, 8 to 9½ oz., per do., 2

29

9 oz., per doz., $2.50.

30

11 oz., assorted patterns, per doz., 25 cts.

32

8

9

1 oz. to 12 oz., nested for shipping, per doz. nest, $2.

9. Goblets, banded, per doz., 65 cents: plain, 50c.
9. Claret to match, per doz., 55 cents; plain, 45.
9. Wines, to match, per doz., 50 cents; plain, 35c.
9. Cordials, to match, per doz., 45 cents; ploin, 35c.

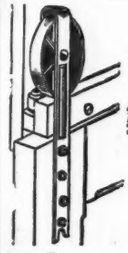
Hand Carts No. 0 42 wheel in. tread, 1 in. axle box 48x28x10 deep $10.50.
No. 1, 36 wheel, 1 in. tread, ⅞ in. axle, box 40x23x10 deep, $9.00.
No. 2, 30 wheel, ¾ in tread, ¾ in. axle, box 32x20x9 deep, $8.25.
With Wagon-Seat Spring.
No. 6, same sizes as

No 0.....$12.00
" 7, same sizes as No. 1..... 10.50
" 8, " " No. 2..... 9.75
With Third Wheel, Without Springs.
No. 3, same sizes as No. 0.....$12.00
" 4. " " No. 1..... 1.50
" 5. " " No. 2..... 9.50

Hardware Specialties.

AUGERS.
Patent Adjustable Hollow. No. 3.
Cuts from ¼ to 1¼, pivoted jaws, graduated scale to 1-16ths, per doz., $60.00.
Discount, 15 and 10%.

BENCH HOOK.
Patent, adjustable and reversible
List $9 dozen, ½ dozen in box.
Discount, 30 and 10%.



BARN DOOR HANGER.
4 in., per doz. pairs.....$12.00
5 " " " 14.40
Track, per foot..... .08
One dozen pairs in case.
Dis., 50 and 10%.

BLACKSMITH'S TONGS.
Swivel Jaw.
No. 1, 16 in., per doz.....$10.00
" 2, 18 " " 10.00
Dis. 20 and 10%.

CASTERS.
Swivel Store Truck
No. 20, japanned, 4 in. wheel, each..... .55
No. 25, " 5 " " " ..... .75
Noiseless turned wheel.
No. 30, japanned, 4 in. wheel, each.... 1.30
No. 35, " 5 " " " 1.60
Discount, 60%

WINDOW SCREEN FRAMES.

Patent Japanned Corners.
No. 25, 36 by 36 corners and screws, without bead, per doz., $2.50.
No. 25, 36 by 36 corners and screws, with bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, without bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, with bead, per doz., $3.30.
Black satin stain, sticks ⅞ by 1 in.
Dis., 25, 10 and 5%.

PULLEY HOOK (New Floor.)
Deep cut thread, forged point.

	Per doz.
¾ in. wrought iron, 8 in. long, list	$1.90
net	1.00

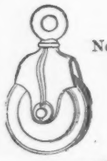
WELL WHEEL.
New pattern.
Japanned.

In.	8	10	12	14	16
Pr.d.	7.00	9.50	12.50	20.00	30.00

Discount, 70%.

PULLEYS.
Side, No. 45, Japanned.

Inches...	1	1½	2	2½	3	4	5
Per doz..	.90	1.00	1.60	2.40	3.50	9.00	15.00

2 inch and under, 2 dozen in box: 2½, 3 and 4, 1 dozen in box; 5 inch, ½ dozen in box.
Discount, 70%.

HAY FORK PULLEY.
New pattern.

No. 15, 5 in. iron wheel	per doz.	$4.50
25, 5 in. wood	"	4.50
66, 6 in. " "	"	6.00

4 dozen in case, 8 dozen in barrel.

No. 15, per dozen, $1.75 net.

SHEAVES.
Patent Common Turned and polished iron wheels, round corners, brass pin, one set in box.

2½ inch	$1.50
3 "	1.60
4 "	2.00
5 "	2.60

Discount, 60%.

SINKS.
All 6 inch deep.

14 × 20 in.	$1.50	18 × 30 in.	$2.50
15 × 25 in.	1.75	18 × 32 in.	3.00
15 × 27 in.	2.00	18 × 36 in.	3.00
16 × 24 in.	1.80	20 × 30 in.	3.00
16 × 28 in.	2.10	20 × 36 in.	3.70
17 × 30 in.	2.25	20 × 40 in.	4.00
18 × 24 in.	2.10		

Discount, 60 and 10%.

SPOKE POINTERS.

	Per doz.
No. 1, points 1⅞ in. diameter,	$9.00
No. 2, points 2⅝ in. diameter,	$15.00

Discount, 15 and 10%.

½ dozen in box.

WRENCHES.
Coes Wrenches.

BLACK.
Knife Handle.

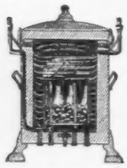
Size.	℔ doz.	Size.	℔ do		℔ doz.
6 inch	$9.00	10 "	12.00	15 inch	24.00
8 "	10.00	12 "	14.00	18 "	30.00
		21 inch	36.00		

BRIGHT.
Knife Handle.

4 inch	$10.00	10 inch	14.00	18 inch	32.00
6 "	10.00	12 "	16.00	21 "	38.00
8 "	11.00	15 "	26.00		

Discount, 55, 10, 7½ and 3 %.
Coes Mechanics' Screw Wrenches, same list, less 50, 10, 10, 7½ and 3 %.
Patent Screw Wrench, same list. Dis, 50, 10, 7½ and 3%.

Ice Machines (Family).



No. 1, Ice machine, ice and ice cream molds, 1 lb. ice, $15.00.
No. 2, Ice machine, ice and ice cream molds, 1½ lbs. ice, $20.00.
No. 3, Ice machine, ice and ice cream molds, 1 carafe 1 bottle holder, 2 lbs. ice, $26.50.
No. 4, Ice machine, ice and ice cream molds, 2 carafe 1 bottle holder, 4 lbs. ice, $33.00.
No. 5, Ice machine, ice and ice cream molds, 3 carafe 1 bottle holder, 6 lbs. ice, $40.00.
No. 6, Ice machine, ice and ice cream molds, 4 carafe, 1 bottle holder, 9 lbs. ice, $46.50.
No. 7, Ice machine, ice and ice cream molds, 5 carafe, 1 bottle holder, 12 lbs. ice, $60.00.
Siberia, 18 lbs., $120. Dis., 20 and 10%.

India Rubber Goods.

MECHANICAL.

RUBBER BELTING.

Inches.	2 ply per foot.	3 ply per foot.	4 ply per foot.	5 ply per foot.	6 ply per foot.
1	$0.07	.....	.....	.....	.....
1¼	0.09	.....	.....	.....	.....
1½	0.11	.....	.....	.....	.....
2	0.15	$0.17	$0.21	.....	.....
2½	0.18	0.22	0.26	.....	.....
3	0.22	0.26	0.31	.....	.....
3½	0.26	0.30	0.37	.....	.....
4	0.30	0.34	0.42	.....	.....
4½	0.33	0.39	0.47	.....	.....
5	0.36	0.43	0.52	.....	.....
6	0.43	0.52	0.62	.....	.....
8	0.59	0.70	0.84	$1.05	$1.25
10	0.75	0.90	1.07	1.33	1.60
12	0.91	1.08	1.30	1.62	1.95
14	1.08	1.28	1.54	1.92	2.31
16	1.25	1.50	1.78	2.22	2.67
20	1.58	1.90	2.26	2.82	3.39
22	1.76	2.12	2.52	3.15	3.74
24	1.96	2.36	2.80	3.50	4.20
28	2.42	2.84	3.36	4.20	5.04
30	.....	.....	3.64	4.55	5.46
34	.....	.....	4.20	5.25	6.30
36	.....	.....	4.48	5.60	6.72
40	.....	.....	5.04	6.30	7.56
42	.....	.....	5.32	6.65	7.98
46	.....	.....	5.88	7.35	8.82
48	.....	.....	6.16	7.70	9.24
50	.....	.....	6.44	8.05	9.66

Dis. Reliance, 60 and 5. Dis. Royal, 60, 10 and 10. Dis Manhattan, 70 and 5. See Leather Belting, page 3; Link Belting, page 9.

PACKING.

Piston Packing.
Round Piston Packing Per lb. 85c.
Discount, 60, 10 and 5 per cent.

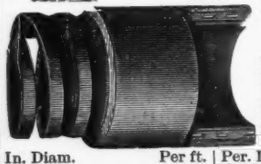
Square Piston Packing.
Price same as above. Round and square piston packing is made in lengths of twelve or twenty-four feet.

Steam Packing.
Cloth Insertion, Rubber Outside
Cloth Insertion, Cloth on one or both sides.

Thickness.	1-Ply.	2-Ply.	3-Ply.	4-Ply.
1-64 inch	70 cts.	.....	.....	.....
1-32 "	65 cts.	.....	.....	.....
1-16 "	60 cts.	63 cts.	66 cts.	.. ....
3-32 "	55 cts.	58 cts.	61 cts.	.....
1-8 "	55 cts.	55 cts.	58 cts.	61 cts.
3-16 "	55 cts.	55 cts.	55 cts.	58 cts.
1-4 "	55 cts.	55 cts.	55 cts.	55 cts.

One-ply of cloth to every 1-16 inch thickness.
Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.
All cloth insertion or plain packing is one yard wide, and any length desired.
Wire insertion packing, all thicknesses, per lb, 50 cents.
Discounts: Reliance, 70 & 10; Royal, 60, 10 & 10; Manhattan, 60 per cent.

HOSE.



Improved "Smooth Bore" Rubber Suction Hose.
On spiral flat or round tinned steel wire.

In. Diam.	Per ft.	Per. Diam.	Per ft.
2 inch	$2.60	7 inch	$13.50
2½ "	3.50	7½ "	15.00
3 "	4.00	8 "	16.50
3½ "	5.50	9 "	19.50
4 "	6.50	10 "	22.50
4½ "	7.50	12 "	27.50
5 "	8.50		
5½ "	9.50		
6 "	10.50		
6½ "	12.00		

Suction hose discount: Reliance, 50 and 10%; Royal, 60, 10 and 5%; Manhattan, 70 and 5%.

SUCTION HOSE.
On spiral brass or iron wire

Int. Diam.	Per. ft.
¾-inch	$ .77
1 "	1.00
1¼ "	1.25
1½ "	1.65
1¾ "	2.10
2 "	2.50

RUBBER HOSE.
Conducting Hose—Two-ply.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
⅛ in.	$0.20	2 in.	$0.66	5 in.	$1.65
¾ in.	25	2¼ in.	75	6 in.	1.98
1 in.	33	2½ in.	83	7 in.	2.31
1¼ in.	42	2¾ in.	92	8 in.	2.64
1½ in.	50	3 in.	99	9 in.	2.97
1¾ in.	58	4 in.	1.32	10 in.	3.33

HYDRANT HOSE—THREE-PLY.

½ in.	$0.25	1½ in.	$0.60	2½ in.	$1.00
¾ in.	30	1¾ in.	70	2¾ in.	1.10
1 in.	40	2 in.	80	3 in.	1.20
1¼ in.	60	2¼ in.	90	3½ in.	1.40
				4 in.	1.60

Discount—Reliance, 60; Royal, 70; Manhattan, 70 and 10 per cent.

GASKETS AND RINGS.

Fibrous.
⅛ inch thick, or less, per lb. $0.90
5-32 inch thick, and upwards, per lb $0.80
Cloth Insertion.
1-16 inch thick, or less, per lb. $1.25
3-32 inch thick, and upwards, per lb. $1.00
There is one ply of cloth to every 1-16 in thickness.
Five cents per pound additional for each extra ply of cloth. Dis., 60, 10 and 5%.

CORRUGATED RUBBER MATTING.
Rolls 1 yard wide, 30 yards long, cut to any size required.

Indurated Fibre Ware.

SPITTOONS.

	Doz.
16 in. dia., 8 in. high	$24.00
12½ in. dia., 5½ in. high	10.80
9 in. dia., 5 in. high	7.80

WASH TUBS.

No. 0, 23 in.	⅛	12	27.00
No. 1, 21 in.	⅛	10½	24.00
No. 2, 19½ in.	⅛	9	21.00
No. 3, 18½ in.	⅛	9	18.00
Nos. 0, 1, 2 and 3, nested	1	n. 3½	7.50
Nos. 1, 2, and 3, nested	½	9¾	5.25

Dis. on all 40%

Pails.

	No. doz. in crate.	Cubic feet.	Price per doz.

KEELERS.

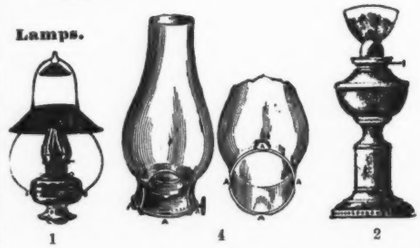
		Doz.
A—20 in.	7 in. deep	16.20
B—19 "	" "	15.00
C—18½ "	" "	14.00
1—17½ "	" "	13.20
2—15½ "	6 in. "	12.00
3—13½ "	5 in. "	10.20
4—12 "	4 in. "	9.00

MILK OR VEGETABLE PANS.
13½ in. dia 3¼ in. deep, 6 quarts, $3.60 per doz.

WASH BASINS.

	Doz.
12½ in.	$3.60

Lamps.



1 4 2

5. Hanging lamp. $12 per doz. 6. Clock night lamp. $21 per doz. 7. Hand lamp. $1.50 per doz.

Miners'.
Brass, Collar and Breast in one piece, Spout and Body in one piece.
Price, $8 per gross net.

Demmler Bros.		Doz.
"Cherry"	Miners' Lamps, double spout	$2.00
"	Drivers' " " "	2.70
"	" " single "	2.50

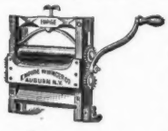
Harp, complete, with square tin shade, per doz., $9.50.
Complete, with Burner and chimney, per doz., $1.50.
Hurricane lanterns 25 cents extra with guards.
875, ¾ wick, without guards, per doz., $5.00.
876, square safety lifting globe, per doz., $5.50.
877, ⅝ wick, safety lifting globe, per doz., $6.75.
Nickel plated diamond reflector road ing lamp, 30 candle-power, $13.50 per doz., net.
Illuminated night clock, $27, per doz.

PAPER LAMPS.

Lined with oil proof composition.

No. 0.	Height, 2½	in.,	per doz	$1.00
No. 1.	" 3	"	"	85
No. 2.	" 3¾	"	"	1.25
No. 3.	" 5	"	"	1.50
No. 4.	" 6½	"	"	1.75

Laundry Appliances. 33



"Empire." Length, 10 in. x 1¾ in. dia. $63 per doz.
"Empire." Length, 11 in. x 1¾ in dia. $74 per doz.
"Empire." Length, 12 in. x 1⅞ in. dia. $84 per doz.
"Empire." Length, 12 in. x 1⅞ in. dia. $87 per doz.
"Empire." Length, 14 in. x 2¼ in. dia. $156 per doz.
"Empire." Length, 14 in. x 2¼ with pulleys. $220 per doz.
"Empire." Length, 16 in. x 2½ with pulleys. $360 per doz.
Dis., 40%.

EMPIRE CLOTHES DRYING BARS. $10 per doz. Dis., 40%.

Closed. Open for use.

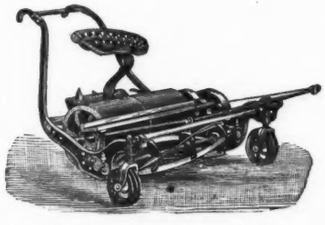
Lawn Mowers. Forward Cut Mowers.

In.	Lbs.		In.	Lbs.	
0	Weight, 30¾	$13.00	16	Weight, 38	$19.00
"	31½	15.00	18	" 41	21.00
"	36	17.00	21		34.00

Dis. 60 and 5%.

10 in.	12 in.	14 in.
$13.00	$15.00	$17.00
16 in.	18 in.	20 in.
$19.00	$21.00	$23.00

24 in., $30.00.
Geared at both ends.
Dis. 60 and 10 and 5 and 5%.



New Excelsior Horse Lawn Mower.

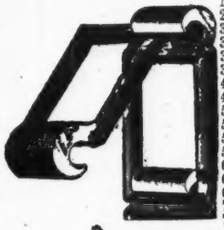
15 in. cut, without shafts or seat	$65.00
20 " with shaft and seat	110.00
35 " " " " "	135.00
40 " " " " "	170.00
Horse boots, per set	12.00

Dis. 50%.

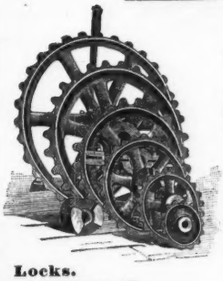
Excelsior Three-Blade Mower and Roller.
8 in., $11.00; 1 in., $13.00; 12 in., 15.00; 14 in., $17.00; 16 in., $19.00; 18 in., $21.00; 20 in., $23.00
Dis. 60% and 5% cash 30 days f.o.b. New York.

Link Belting.

Price per running foot, net.



No.	Price.	No.	Price
25	$0.13	78	$0.40
32	.13	83	.45
33	.12	85	.50
34	.13	88	.50
35	.14	95	.60
42	.16	103	.75
45	.16	105	.70
51	.20	106	.90
52	.25	107	.80
55	.22	108	.80
57	.24	109	.90
62	.30	114	1.10
66	.30	122	1.50
67	.30	124	1.30
75	.35	146	1.40
77	.35		



Sprocket Wheels

Bored, Set-Screwed or Key-Seated.

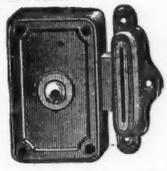
In ordering always state which are the driving, and which the driven wheels.

Wheels made in halves split) or with large hubs, and solid webs, can be furnished, for which an additional charge is made.

Discount, 40%.

Locks.

YALE PATENT.
RIM STORE LATCH.



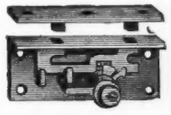
	Per doz.
3 × 5 in., 4 keys	$48.00
2½ × 4 in., 3 keys	39.00

RIM NIGHT LATCH.

Spring lock, 3 keys	18.00
Dead lock, 3 keys	25.00

CUPBOARD.

Dead Lock	10.80
Spring Lock	13.80



CHEST LOCKS.

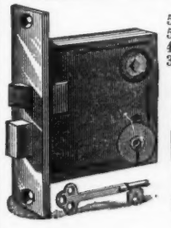
Plated nose	19.20
Brass "	18.00

DRAWER LOCK.

Plated nose	10.20
Brass "	9.00

KNOB LOCKS.

5 × 3⅜	22.50
5 × 3⅜	20.00
4¼ × 3⅜	13.25
3½ × 3⅜	10.50



STANDARD LATCHES.
Dead locks.

3¾ × 2¾	24.00
2½ × 3⅜	14.00
1¾ × 2⅜	12.00

NIGHT LATCHES.

3¼ × 3⅜	20.00
2½ × 3¾	18.00

DRAWER LOCKS.
2 × 1⅝, two tumblers.

Plated nose	7.50
Brass "	6.00

Three tumblers.

Plated nose	9.00
Brass "	7.50

RIM FLUSH DRAWER LOCK.
2 in. diameter.

	2 tumblers.	3 tumblers.
Plated nose	7.50	9.00
Brass "	6.00	7.50

BRONZE SPRING PADLOCK.
2 flat steel keys.

In.	
1	
1	11.00
1¼	12.00
1½	13.50
¾	14.50
2	16.00
2¼	17.50

Subject to special net prices; no discount

YALE KEYS.

Machinery—Foot Power.

Engine Lathes

8 in. swing, 20 in. bet. centers, 36 in. bed, 240 lbs. weight, $60.
8 in. swing, 30 in. bet. centers, 46 in. bed, 260 lbs. weight, $70.
8 in. swing, 36 in. bet. centers, 52 in. bed, 280 lbs. weight, $75.

Boxing for export, $2.50 extra; f.o.b. at Cincinnati, 25 % dis.

SAWS AND LATHES.

Victor Scroll Saw, Cuts to 3 Inches.
24-inch swing, with 12 saw blades....
Dis., 20%.

Empire Scroll Saw, Cuts to 3 Inches.
24-in. swing, drill and tilting table.
Price, boxed..... $25
Dis., 20%

The Acme Combination Saw.
Hand or steam power.
Adjustable table and gauges.

Price, boxed	$40
Scroll saw attachment	
Boring attachment	10
Moulding attachment	10

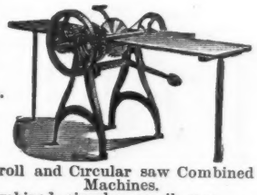
Dis., 20%.

Paragon Self Feed Rip Saw.
Two changes of speed; three changes of feed.
Price, with one 10 in. saw, $50.00
Dis., 20%.

Diamond Mortising Machine.
Will mortise ¼ to 1 in. wide, 3 in. deep.
" cut tenons ⅛ to ¾ thick, 3 in. wide.
Price, with 3 chisels $25.00
Dis., 20%.

The "Star" Lathe.
Swings 9 × 25 in., back geared screw cutting.
Feeds in or out, right or left. Adjustable Tail Stock for Tapers.
Price, No. 1.....$75.00
Dis., 20%.

Challenge, Hand Circular Rip Saw.
Cuts 3¾ thick, 19 in. wide.
Price $50.00.
Dis.,



Scroll and Circular saw Combined Machines.
Combined circular scroll saw and boring attachment—2 circular saws, 12 assorted scroll saws, boring attachment, and self-centering drill chuck.....$50.00
Combined circular and scroll saw—2 circular and 12 scroll saws..... 40.00
Circular saw—1 extra rip and 1 cross-cut saw..... 35.00
Counter shaft for steam power..... 10.00
Dis., 35%.

Foot Power Former.
$20.00; Knives extra, $1.00 each.
Dis., 35%.

Mortising Machine.
$22.00; Chisels, $1.00 each.
Dis., 35%.
Blind Slat Chisels, 3 set bits, $5.00.
Dis., 20%.

Tenoning Machine,
Price, $25.
Dis., 35%.

Velocipede Scroll Saw,

Without boring attachment	$20.00
With " "	23.00

1 doz. saw blades, 1 3-16 bit. } Included. Dis., 35%.

Lathe.

centres, 1 spur, 2 tool rests and sockets, 1 turned face-plate, $35.

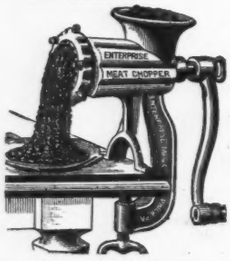
Dis., 30%.

Lathe.

One turned face-plate, two pointed and one spur center, two rests, with sockets and plate for hand tools, slide rest-wrench, belting, etc., $40.

Dis., 25%.

Meat Cutters.



5, each		$2.00
10,	"	3.00
22,	"	4.00
41,	"	.50.00

This is a power machine.

Dis., 50%.

Motors (Water).

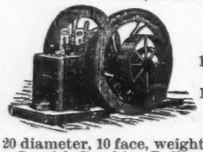
No. 1	$30
No. 2	60
No. 3	125
No. 4	175
No. 5	275

Under pressures of 30 lbs.	60 lbs.	100 lbs.
.3 H. P.	1. H. P.	2.1 H. P.
.8 H. P.	2.3 H. P.	4.9 H. P.
1.3 H. P.	3.3 H. P.	8.3 H. P.
2.4 H. P.	6.9 H. P.	14.7 H. P.
4.3 H. P.	12.4 H. P.	26.1 H. P.

Dis., 10%.

Mining Wheels.

Power according to pressure:
3 to 50, 10 to 100, 15 to 150, 20 to 200, 30 to 300 H. P.



Concentrating Machinery.

Blake Improved Crusher: 10x7, weight 7,500; $410.00.

Blake Improved Crusher: 15x9, weight 9,000; $580.00.

Discount 25%.

Cornish Crushing Rollers: 20 diameter, 10 face, weight 5,400; $450.00.

Cornish Crushing Rollers: 20 diameter, 14 face, weight 6,000; $500.00.

Cornish Crushing Rollers: 22 diameter, 14 face, weight 9,500; $625.00.

Cornish Crushing Rollers: 27 diameter, 14 face, weight 13,000; $750.00.

Cornish Crushing Rollers: 30 diameter, 14 face, weight 15,000, $850.00.

Discount 25%.

Complete Sizing Arrangement, consisting of Revolving Screens of Steel Sheet and Hydraulic Classifier.

For Concentrator, 25 tons capacity, $250; 50 tons capacity, $350; 75 tons capacity, $450; 100 tons capacity, 800. Discount, 10 per cent.

Automatic working Jig Machines, all complete, woodwork included, with slide motion: 2 sieves, $310; 3 sieves, $360; 4 sieves, $450.

With Eccentric Motion, all complete, woodwork included: 1 sieve, $200; 2 sieves, $270; 3 sieves, $320; 4 sieves, $330.

Automatic working Double Jig Machines, all complete, woodwork included: 4 sieves, $210; 6 sieves, $335; 8 sieves, $425. Discount, 25 per cent.

Single Rittinger Percussion Tables, all the iron parts, $350; Double Rittinger Percussion Tables, all the iron parts, $500. Discount, 10 per cent.

Improved Rotary Tables, all the iron parts and pipes, $200. Discount, 25 per cent.

Nails and Tacks.

Swedes. Tacks.

Per doz.	½	¾	1	1½	2	2½	3	
½ wt..	35	40	46	50	55	60	65	75
6	8	10	12	14	16	18	20	24 oz.
85	1.00	1.20	1.40	1.60	1.75	1.85	2.15	2.55
Doz. full	½	¾	1	1½	2	2½	3	4
weight	60	70	80	90	1.00	1.10	1.20	1.40
6	8	10	12	14	16	18	20	24 oz.
1.60	1.90	2.30	2.70	3.10	3.40	3.80	4.20	5.00
lb., bulk	½	¾	1	1½	2	2½	3	4
or paper	1.60	1.25	1.00	80	66	58	52	46
6	8	10	12	14	16	18	20	24
36	32	31	30	29	28	28	28	28

Discount, 67½, 10 and 2%.

Cut Tacks. Price per dozen ounces.

	1	1½	2	2½	3	4	6	8	10
¼ wt	..	..	..	..	35	40	45	50	55
	12	14	16	18	20				
	60	70	80	90	1.00				
½ wt.	1	1½	2	2½	3	4	6	8	10
	45	50	50	55	60	65	70	80	95
	12	14	16	18	20				
	1.10	1.25	1.40	1.55	1.70				
Full wt.	1	1½	2	2½	3	4	6	8	
	80	90	90	1.00	1.10	1.20	1.30	1.50	
	10	12	14	16	18	20			
	1.80	2.10	2.40	2.70	3.00	3.30			

Discount, 70, 10 and 2%.

O. H. Swedes.

Price, same as Swedes. Swedes steel tacks same list price as iron.

Discounts, 72½, 10 and 2%.

Upholsterers.

Price, same as Swedes.

Carpet Tacks, flat and oval heads.

Blued, doz. oz.	4	6	8	10	12	14	16	18	20
¼ wt.	35	40	45	50	55	65	75	85	95
	22	24							
	1.05	1.15							
" ½ wt.	4	6	8	10	12	14	16		
	65	70	80	95	1.10	1.25	1.40		
	18	20	22	24					
	1.55	1.70	1.85	2.00					
Tinned, doz. ¼ wt.	4	6	8	10	12	14	16		
	50	55	60	75	85	1.00	1.10		
	18	20	22	24					
	1.20	1.35	1.45	1.60					
Tinned, doz. ½ wt.	4	6	8	10	12	14			
	95	1.05	1.15	1.40	1.60	1.85			
	16	18	20	22	24				
	2.10	2.35	2.60	2.85	3.10				

Discount, 72½, 10 and 2%.

Finishing Nails.

Inch	3/8	3½-8	4-8	4½-8	5/8	5½-8	6-8	7-8	1
Per lb.	48	40	32	28	26	24	22	20	18

1⅛ and larger. 16

Discount, 60, 10 and 2%.

Chair Nails.

Doz. ½ wt. ; doz. full wt.; pound B. or P.

Inch	3/8	3½-8	4-8	4½-8	5/8	5½-8	6-8	7-8
Per lb.	51	43	35	31	29	27	25	23
	1	1⅛						
	21	19						

Discount, 60, 10 and 2%.

Common and patent brads.

inch.	Price per doz. ½ wt.	Price per doz. full wt.	Price per lb. in papers or bulk.
2-8	.50	1.00	1.25
3-8	.60	1.20	.80
4-8	.65	1.30	.58
5-8	.72	1.44	.48
6-8	.80	1.60	.36
7-8	.90	1.80	.30
1	1.00	2.00	.26
1¼	1.12	2.24	.25
1½	1.26	2.52	.24
1¾	1.82	3.64	.22
2	2.25	4.50	.20
2½	2.43	4.86	.18

Dis. 60, 10 and 2%.

Oils.

LUBRICATING.

Lubroleine A cylinder oil 50 in. barrels.
Lubroleine D cylinder oil 40 in. barrels.
Lubroleine A machine oil 45 in. barrels.
Lubroleine B machine oil 35 in. barrels.
Lubroleine A engine oil 50 in. barrels.
Lubroleine B engine oil 40 in. barrels
In cases 5c gal. extra.

Crescent Axle Grease.—Barrels, 3c per lb 100-lb. kegs 3½c lb.; 2-lb. decorated tins, $12, gross less 5 per cent.

Texas Star Axle Grease.—Barrels, 2½c per lb.; 10 lb kegs, 3c per lb.

See Axle Grease, page 2.

Packing.

Eureka, 75c. per lb. Dis., 40%.
Soapstone—Standard, 8c. per lb.
XX. 11c. per lb.
Crown—No. 1, 23c. per lb.
No. 2, 26c. per lb.
Climax, 9c. per lb. Net.

SELDEN'S PATENT.

For Steam, Air, Water and Ammonia.
With Rubber Core, 60 cents per lb.
Dis., 25 and 5%.
With canvas core, 50 cents per lb.
Dis., 30 and 5%.

Paper, Waxed.

White.	Per ream.
XX, 24 × 36	$2.20
"Sparks' A No. 1 Brand," 24 × 36	2.10
"Progress No. 2," 24 × 36	1.80
"Climax," 24 × 36	1.60
" 24 × 36	1.36
FF, or B. F., 24 × 36	1.00
Colored.	
A, 24 × 36	2.40
B. 24 × 36	2.00
Manilla.	
A, 24 × 36	1.88
"Climax," 24 × 36	1.40

Discount, 5%.

Manilla. No.	Flat bags. Per M.	Sq. bags. Per M.
¼	$1.25	$1.40
2½	1.50	1.75
	1.85	1.85
3½	2.00	2.30
	2.25	2.60
	2.70	3.10

White. No.	Flat bags. Per M.	Sq. bags. Per M.
¼	$1.70	$1.90
½	2.05	2.25
1	2.60	2.85
1½	2.80	3.15
2	3.12	3.45
3	3.70	4.10

Mikado. No.	Per M.
¼	$1.40
½	1.75
1	1.85

Mikado. No.	Per M.
1½	$2.30
2	2.60
3	3.10

Discount, 10%

The Eureka Pen Cleaners.

Single pen cleaner, $3 doz.
Double pen cleaner, $6 doz.
With double ink wells, $18 doz.

Pen cleaner with single ink well, $12 doz.
40% disc't.

Portable Houses.

Weight, 450 lbs.

Price, $150.

Closes securely.

Dis., 10%.

Post Hole Diggers.

Little Giant	$36.00	doz 11 cu. ft.
Hercules	30.00	" " " "
New Champion	20.00	" " " "
Scheidler	36.00	" " "

Dis. 40% f o.b. New York or Boston.

Presses.

41, 42, 43, 44, 45.

Combined press for cutting, forming, horning and seaming.

Particulars of flat front presses, including beds, slides, bolsters, plates, etc.

Prices are net, delivered on steamers in New York, including insurance, etc.

Nominal size of press	41	42	43	44	45
Price, including et ceteras	$140	$220	$300	$420	$700
Weight, about lbs	600	1050	1900	3600	7200
Greatest diameter that can be wired ins	5	7	10	14	20
Greatest depth that can be wired ins	8	10	13	16½	20
Hole through bed—circle intersecting ins	4½	6	8½	12	17
Hole through back—width ins	8	9½	12	15½	20½
Width between die clamps—clear ins	8	11	15	20	27
Distance back from center of slide bar ins	4½	5½	7	9	12
Height to slide-bar, when up. ins	5¼	6½	7½	8½	9
Stroke of slide-bar ins	1	1¼	1½	1¾	2
Adjustment of slide-bar ins	1	1¼	1½	1¾	
Diameter of fly-wheel ins	20	26	32	38	44
Width of fly-wheel ins	3	4	5	6	7
Weight of fly-wheel, about lbs	125	250	420	725	1100
Speed per minute, about rev	120	110	100	90	80
Cubic feet boxed, about	30	40	50	60	70

Printers' Sundries.

Wood rules, 12 cents per yard.
Wood rules, on end wood, 15 cents per foot.

EUREKA STAND.

12 full cases.

Price without cases	$12.00
Boxing and cartage	1.25

SHOOTING STICKS.

Each.
No. 1, 75c.
No. 2, $1.
No. 4, 45c., black.
No. 4, 60c., bright.
No. 5, 60c., black.
No. 5, 75c., bright.

GAUGE PINS—ALL SIZES.

Brass, 40c. doz. | Steel, 60c. doz.
Wire, 25c. doz. | Golden, 40c. doz.

MITRE BOXES.

Regular size, 2 in., 50c. each.
Extra size, 3½ in., 75c. each.

LEAD CUTTER.

Curtis' Lead Cutter $2.00

PROOF PRESS, "OUR OWN."

× 32, complete, with Brayer $28.00

THE GLOBE PRESS.

8 x 12 in. inside clear, with throw-off	$150.00
9 x 13 in. inside clear, with throw-off	175.00
10 x 15 in. inside clear, with throw-off	200.00
11 x 17 in. inside clear, with throw-off	250.00
Steam fixtures	15.00
Fountain	12.50

Dis. 20%.

THE "LIBERTY" JOB PRINTING PRESS.

	Size of chase.	
No. 2	— 7 × 11	$200
2a	— 9 × 13	250
3	—10 × 15	300
3a	—11 × 17	350
4	—13 × 19	400
5	—14½ × 22	500

Dis., 12½ and 5%.

Two sizes built extra strong for boxmakers, embossing, etc.

No. 3a	—11 × 17	$375
4	—13 × 19	425

Dis., 12 and 5%.

Fountains, either size, $25 extra, if ordered with press. Steam fixtures, either size, $15 extra.

THE AM RICAN CARD AND BILL HEAD PRESS.

No. 5	—4 × 6	$10
7	—6 × 9	30
8	—8 × 12	60

Dis., 20% and 5%.

THE "LIBERTY" PAPER CUTTER.

Cuts 30 inches.....$140.00

Extra knife..... 18.80

Dis., 12½ and 5%.

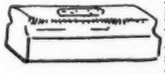
THE "LIBERTY" TYPE CASES.

Name.	Outside Measurements.
Full size	32¼x16½x1 9-16
Rooker size	28½x14¼x1 9-16
¾ size	26x16½x1⅜
⅔ size	22⅜x16½x1⅜
Enlarged size	32¼x23x2 3-16
Wood type "	32¼x23x1 9-16
Mammoth "	44x23x1 9-16

Cabinet case sides extend 1½ to 3 inches. In ordering cabinet cases, state whether high or low fonts are wanted. 30 and 5%.

THE "LIBERTY" STEEL SHOOTING STICKS.
Bright, $1 each.
Nickelplated, $1.25 each.
Dis., 40%.

THE "LIBERTY" PLANERS AND PROOF PLANERS.



Midget planer	10c.
Small Maple	20c.
Large "	25c.
" b'ked with leather	30c.
Midget " " "	12c.
Proof planer, faced with cloth	50c.

Dis., 40%.

COMPOSING STICKS.

GROVER'S PATENT AND UNION.

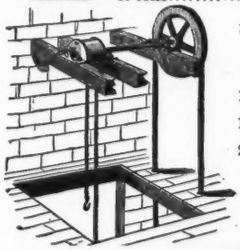
	Screw or News.
6 in.	1.10 $ .90
8 "	1.20 1.10
10 "	1.40 1.20
12 "	1.60 1.40
14 "	1.80 1.60
16 "	2.00 1.80
18 "	2.20 2.00
20 "	2.40 2.20

Composing rules, 14 ems pica and under, 25 cents.

Pulley Blocks.

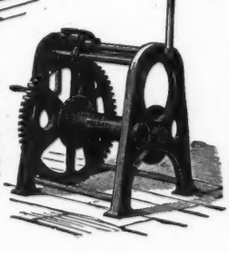
WESTON DIRECT.

	Each.
⅛ ton	$10
¼ ton	13
⅓ ton	15
1 ton	20
1½ tons	25
2 tons	30
3 tons	40
Geared.	
1 ton	34
2 tons	55
3 tons	60
4 tons	80
5 tons	110
6 tons	150
8 tons	216
10 tons	250



DOUBLE LIFT HOISTS FOR HATCHWAYS, ETC.

500 lbs	$25.00
1000 "	50.00
1500 "	65.00
2000 "	80.00
500 "	30.00



WESTON CRAB SAFETY BRAKE, HANDLES CANNOT FLY BACK.

	Each.
21	$35.00
22	45.00
23	65.00
25	100.00

Pumps.

Prices on all pumps include cylinders.

Fig. 101. No.	Dia. Cyl.	Cap. Suction. stroke.	Price Iron.	Price Brass cyl.
0	2 in.	1 in. 1-15 gal.	$3.50	....
1	2¼ "	1 " 1-12 "	4.00	$6.00
2	2⅝ "	1¼ " 1-11 "	4.50	7.00
3	2⅞ "	1¼ " 1-10 "	5.00	8.00
4	3 "	1¼ " 1-6 "	5.50	10.00
5	3¼ "	2 " 1-5 "	6.50	14.00
6	3½ "	2 " 1-4 "	8.00	18.00
7	4 "	2½ " 1-3 "	12.00	20.00

Fig. 99½. Dis. 70%.

1	2½ in.	1¼ in. 1-10 gal.	4.25	....
2	3 "	1¼ " 1-7 "	4.75	....
3	3½ "	1¼ " 1-5 "	5.25	....
4	4 "	1½ " 1-4 "	5.75	....
5	4½ "	1½ " 1-3 "	6.25	....

Dis., 75%.

Standard and Cylinder for 1¼-in. Iron Pipe, $16.00. Dis., 55%.

Fig. 118.

Fig. 120.

No. 6½, standard and cylinder, 1¼-in. pipe, $13.00.

No. 7½, standard and cylinder, 1¼-in. pipe, $15.00.

No. 8½, standard and cylinder, 1¼-in. pipe, $18.00.

With hose and discharge pipe, add $3.00 to list price.

Fig. 133. Dis., 55%.

No. 1, diam., cyl., 2½ in.; cap. stroke, 1-8 gal.; size pipe, 1¼ in. Price, iron, $12.50; brass cyl., $17.50.

No. 2, diam. cyl., 3 in.; cap stroke, 1-6 gal.; size pipe, 1¼ or 1½ in. Price, iron, $14.50; brass cyl., $18.50.

No. 3, diam. cyl., 4 in.; cap. stroke, 2-5 gal.; size pipe, 1½ or 2 in. Price, iron, $23.60; brass cyl., $31.50. Fig. 275. Dis., 55%.

No. 1, diam. cyl., 3 in.; suction, 1¼ in.; cap. stroke, 3-10 gal. Price, iron, $28.00; brass cyl., $58.00.

No. 2, diam. cyl., 4 in.; suction, 1½ in.; cap. stroke, 1-2 gal. Price, iron, $32.00; brass cyl., $60.00.

No. 3, diam., cyl., 3 in.; suction, 2 in.; cap. stroke, 6-7 gal. Price, iron, $35.00; brass cyl., $90.00.

No. 4, diam. cyl., 6 in.; suction, ½ in. cap. stroke, 1 1-5 gal. Price, iron, $45.00: brass cyl., $120.00. Dis., 45%.

Fig. 287.

No.	Diam. cyl.	Cap. stroke.	Stroke.	Pipe.	Price.
0	2 in.	1-11 gal.	7 in.	1 in.	$21.50
00	2½ "	1-7 "	7 "	1 "	23.00
1	3 "	1-5 "	7 "	1¼ "	25.25
2	3½ "	1-3 "	7 "	1½ "	27.25
3	4 "	4-10 "	7 "	2 "	30.50
3½	4½ "	1-2 "	7 "	2 "	37.50
4	5 "	8-10 "	10 "	2½ "	44.00
4½	5½ " 1 "		10 "	2½ "	47.00
5	6 " 1 1-5 "		10 "	3 "	50.00

Dis., 45%.

Fig. 278.

No.	Diam cyl.	Cap. Stroke.	Diam pipe.	Price Iron.	Price Br's cyl.
1	2 in.	1-5 gal.	1 in.	$39	$51
2	2½ "	1-3 "	1¼ "	41	56
3	3 "	1-2 "	1½ "	45	62
4	3½ "	6-7 "	2 "	51	81
5	4 "	7-8 "	2 "	63	114
6	4½ " 1 "	"	2 "	80	155

Dis., 45%.

With Tight and Loose Pulleys.

Pulsometer Pump.

Gals. per minute.	Weight.	Net price.	Size boiler.
10	35	$50	....
20	125	75	3
60	210	100	5
100	355	150	6
175	475	175	8
300	695	225	12
425	850	275	15
700	1,600	400	20
1,000	2,000	500	30
2,000	5,000	1,000	40

No.	Height.	Space occupied. In.	Size of steam pipe	Size of suction pipe.	Size of discharge pipe.
1	14 in.	9 × 7	⅛ in.	1 in.	1 in.
2	20 "	15 × 12	¼ "	1½ "	1½ "
3	23 "	1' × 14	⅜ "	2 "	2 "
4	30 "	21 × 16	½ "	2½ "	2½ "
5	34 "	24 × 20	½ "	3 "	3 "
6	40 "	28 × 22	¾ "	3½ "	3½ "
7	43 "	30 × 24	¾ "	4 "	4 "
8	54 "	33 × 29	1 "	5 "	5 "
9	61 "	37 × 31	1½ "	7 "	6 "
10	80 "	52 × 45	2 "	8 "	8 "

Rat Traps.

1 doz. in box.

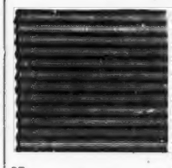
1 gross in case.

$30 per gross.

Dis. 50 and 10%.

Roofing.

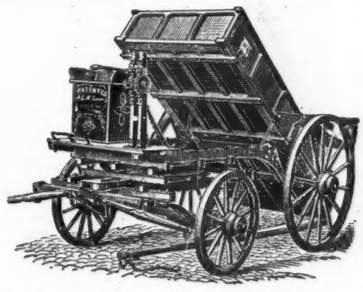
CORRUGATED IRON.
2½ inch corrugations.



Gauge.	Per square.
No. 18, painted red	$9.10
No. 20, " "	7.60
No. 22, " "	6.50
No. 24, " "	5.35
No. 26, " "	4.65
No. 27, " "	4.35
No. 28, " "	4.00
No. 18, galvanized	13.30
No. 20, "	10.60
No. 22, "	9.10
No. 24, "	7.45
N	7.05
No. 27 galv "	6.95
No. 28 "	6.75

Dis., 10%. F. o. b. N. Y.

Railroad Dumping Cars and Carts.



Cars.	Gauge.	Cap.	Net	Cap.	Net	Cap.	Net
Side Dumping	24"	1 c. y.	$55	2 c. y.	$65	3 c. y.	$75*
End "	"	"	55	"	65	"	75*
Revolving "	"	"	70	"	80	"	90*
Bottom "	"	"	80	"	90	"	100*
Tunnel	"	"	55	"	65	"	75*
Mine	"	"	50	"	60	"	70*
Plantation	30"		43				
Logging	36"		170				
"	4' 8½"		185				
Hand	36"		45				
"	4' 8½"		50				
Push	36"		40				
"	4' 8½"		45				
R.R. Construction	36"		60				
"	4' 8½"		65				
Carts.							
Plantation and Railroad			45 to 75				
Wagons.							
McEwen Patent Dumping		1 " "	175	1½ "	200		

*These cars built of any gauge from 18" to 56½" and of any capacity from ½ to 6 cu. yd.

Saw Set.

Adjustable ball and socket saw clamp,

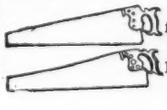
Japanned, $14 per doz.

Saws.

PATENT GROUND AND TEMPERED SOLID TOOTH CIRCULAR SAWS.

Diameter. Inch.	Thickness. Gauge.	Size of hole—Inch.	Price each.	Extra for each additional gauge heavier.	Prices for bevelling new saws (grinding or bevelling old saws, extra).—Per gauge.
1	24	⅜	$0.50	$0.01	$0.06
2	23	⅝	.60	.01½	.08
3	21	½	.70	.02½	.10
4	19	¾	.90	.03	.14
6	18	¾	1.30	.05	.18
8	18	⅞	1.75	.08	.22
10	16	1	2.30	.12	.28
12	15	1	3.00	.17	.35
16	14	1⅛	5.50	.25	.50
20	13	1 5-16	8.50	.35	.70
24	11	1⅜	12.00	.55	.90
28	10	1½	16.00	.80	1.20
32	10	1⅝	20.00	1.00	1.40
36	9	1⅞	25.50	1.40	1.70
40	9	2	35.00	2.00	2.00
44	8	2	52.50	3.00	2.40
48	8	2	70.00	4.00	2.80
52	7	2	90.00	5.00	3.25
56	7	2	115.00	7.00	3.75
60	6	2	145.00	9.00	4.25
64	6	2	180.00	12.00	5.00
68	5	2	225.00	18.00	5.75
72	5	2	290.00	24.00	6.55
76	5	2	375.00	30.00	7.50

Circular saws to cut metal or ivory, 50% advance. No extra charge for saws one gauge thicker than list. Circular saws beveled one gauge without extra charge up to 44 inches; 44 inches and larger, beveled two gauges without extra charge. Dis., 45%.



Hand—London Spring Steel four brass screws.
26 in. $30.00 per doz. Dis., 20%.
Hand—Skew Back Saw, Apple Handle; 5 screw.
26 in. $22.00 per doz.

Hand—Grained Blade, Beec handle, polished edge; 4 screws. 26 in. $20.00 per doz.

Dis., 20%.
One man Cross-Cut—Supplementary Handle.

	3 ft.	3½ft.	4 ft.	4½ ft.	5 ft.	5½ ft.	6 ft.
Great American,	$2.75	$3.00	$3.50	$4.00	$4.50	$5.00	$5.50
Champion Tooth,	2.35	2.60	3.15	3.50	3.85	4.25	4.65

One man cross cut handles, $4.50 per doz. Dis., 45%.

Sash Chains.

No. A. "Giant" metal, 15c. p ft., wts. not over 125 lbs.
No. 1. "Giant" metal, 12c. pr. ft., wts. not over 75 lbs.
No. 2. "Giant" metal, 10c. pr. ft., wts. not over 40 lbs.
No. 0. "Giant" metal, 8c. pr. ft., wts. not over 25 lbs.
No. 1. Red metal, 10c. pr. ft., wts. not over 40 lbs.
No. 2. Red metal, 8c. pr. ft., wts. not over 30 lbs.
No. 0. Red metal, 6c. pr. ft. wts. not over 15 lbs.
No. 1. Steel, 8c. pr. ft., wts. not 75 lbs.
No. 2. Steel, 6c. pr. ft., wts. not over 30 lbs.
No. 0. Steel, 4c. pr ft., wts. not over 15 lbs.
No. 1. Steel, black enameled, 9c. pr. ft., wts. not over 75 lbs.
No. 2. Steel, black enameled, 7c. pr. ft., wts. not over 30 lbs.
No. 0. Steel, black ena'd, 5c. pr. ft., wts. not over 15 lbs.

Fastenings for hanging a window of 2 sashes for Nos. 1 and 2 chains, consisting of 4 hooks, 4 rings, 4 sash irons, a set, 18c. per set.

Fastenings for hanging a window of 2 sashes for No. 0 chains, 14c. per set.

Dis. on "Giant" metal chain	40	10	10%
" " Red metal chain	40	10	10 10%
" " Steel " "	40	10	10 10%
" " Fastenings	40	10	10%

Scales.—Discount on scales, 45%.

Postal scales.
No. 1, capacity ½ to 9 oz. $3.00.
No. 2, capacity ½ to 12 oz. $4.00.
No. 3, capacity ½ to 34 oz. $6.00
No. 4, capacity ½ oz. to 1 lbs., $8.00

Druggists.

Capacity.	Scoop.	Capacity.	Scoop.
1-16 oz. to 8 lbs.	Tin ..$10.00	1-16 oz. to 8 lbs.	Brass..$11.00

Even balance trip scales, seamless scoop, with weights.

No. 1, capacity ½ oz. to 2 lbs., tin scoop, $5.50 brass scoop, $6.50.
No. 2, capacity ½ oz. to 4 lbs., tin scoop, $6.50; brass scoop, $7.50.
No. 2½, capacity ½ oz. to 18 lbs , tin scoop, $11; brass scoop, $12.50.

Counter.

Capacity.	Scoop.	Capacity.	Scoop.
½ oz. to 36 lbs.	Tin ..$10.00	½ oz. to 36 lbs.	Brass..$12.00

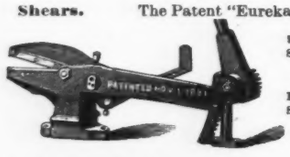
Grocer.

Capacity.	Scoop.	Capacity.	Scoop.
½ oz. to 62 lbs.	Tin ...$12.00	½ oz. to 62 lbs.	Brass..$14.00

Meat or Butter Scales, with Slab.

½ oz. to 62 lbs., with Single Beam.....$14.00
" " " " Double " 15.00

Shears. The Patent "Eureka



No. 1 cuts round metal up to ¼ in. steel to ⅜, $12.

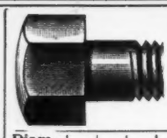
No. 2 cuts round metal up to ⅛ in., steel to 3-16, $20.

Discount, 25%.

Steel Wire Mats.

Galvanized Steel Wire.	Size	(Style A) "Hartman Flexible."
No. 2.	16x24. Each	..$1.50
No. 3.	" 18x30. "	.... 2.00
No. 4.	" 22x36. "	.... 3.00
No. 5.	" 26x48. "	.... 4.50
No. 6.	" 30x48. "	.... 5.25
No. 7.	" 36x48. "	.... 6.50
No. 8.	" 36x60. "	.... 8.00
No. 9.	" 36x72. "	....10.00

Brass mats "list" double the price of galvanized Style A) for similar sizes.
3 doz. lots, dis. 33⅓%.
6 doz. lots, dis. 40%.
12 doz. lots, dis. 40 and 5%.



Screws.

STEEL SCREWS ADD 50% TO LIST.
Prices are per 100.
Hexagon Cap Screws.
Heads on Steam-tight Screws not polished, unless so ordered. Can make these 12 inches long.

Diam. head.	7-16	½	9-16	⅝	¾	13-16	⅞	1	1⅛	1¼	1⅜
Length head.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛
Diam. screw.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞		1⅛
¾..	3.00	3.25	3.75	4.40	5.50	7.00					
1 ..	3.25	3.50	4.00	4.70	5.70	7.00	9.50				
1¼..	3.50	3.75	4.25	5.00	6.00	7.50	9.50	12.20			
1½..	3.75	4.00	4.50	5.30	6.30	8.00	10.00	12.20	16.00		
1¾..	4.00	4.25	4.75	5.60	6.60	8.50	10.60	12.80	16.60	21.20	
2 ..	4.25	4.60	5.05	5.95	7.00	9.10	11.20	13.40	17.20	22.30	29.00
2¼..		5.00	5.40	6.35	7.50	9.70	11.90	14.10	17.90	23.60	30.50
2½..			5.80	6.80	8.00	10.40	12.70	14.90	18.80	25.10	32.30
2¾..				7.30	8.60	11.2)	13.60	15.90	20.00	26.90	34.40
3 ..					9.30	12.1o	14.70	17.00	21.80	29.00	37.00
Thread to in.	20	18	16	14	12	12	11	10	9	8	7
Add for each ¼ in.	30	40	50	60	80	1.00	1.30	1.60	2.00	2.40	3.00

Dis., heads ground, 60 and 10%; dis., heads black, 60, 10 and 5%; dis., heads extra finish, 50 and 10%; dis., heads case-hardened, 55% and 10 dis.; dis., heads polished after hardening. 45 and 10%.

MILLED FROM SOLID BAR.

Fillister.				Bevel Head.				Button Head		
Diam. Head	3-16	¼	⅜	7-16	9-16	⅝	¾	13-16	⅞	1
Length Head	⅛	3-16	¼	5-16	⅜	7-16	½	9-16	⅝	¾
Diam. Screw	⅛	3-16	¼	5-16	⅜	7-16	½	9-16	⅝	¾
¾	2.00	2.25	2.50	3.00	3.50	4.00	5.00			
1	2 25	2.50	2.75	3.25	3.75	4.25	5.30	6.60		
1¼	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90	9.00	
1½	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	12.00
1¾		3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50
2			3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00
2¼				4.75	5.50	6.00	7.25	8.50	11.50	13.75
2½					6.00	6.50	7.75	9.00	12.00	14.50
2¾						7.00	8.25	9.50	12.75	15 25
3							8.75	10.00	13.50	16.00
Threads to inch.	40	30	20	18	16	14	12	12	11	10

Head on Bevel and Button Head Screws, 1-16 larger in diameter than above specifications.
Price, according to size of head.
Discount, 50 and 10%; case hardened, 45 and 10%; case hardened and polished, 35 and 10%.

Spades and Shovels.

JONES

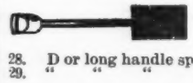
Patent plain black solid cast-steel shovels and spades.

Patent solid steel shovel.

No.		No.	Per Doz. Black.	Per Doz. Pol's'p
20.	D. or long handle sq.-point shovels.	2	$15.50	$16.50
21.	" " " " "	3	16.25	17.25
22.	" " " " "	4	17.00	18.50
23.	" " " " "	6	17.50	19.00
24.	" " " " charcoal.	8	20.50	22.00

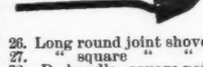
Pt. plain back solid cast steel shovel.

25.	D or long handle round-point shovels.	3	16.25	17.25



Patent solid cast steel spade.

28.	D or long handle spades	2	6.00	17.0
29.	" " " "	3	16.50	18.0



Patent plain back solid cast steel.

26.	Long round joint shovel	No. 2	15.50	16.50
27.	" square " "	No. 2	15.50	16.50
32.	D. handle square-point molders' shovels	2	.....	17.00
34.	D. handle round point railroad, extra heavy	2	15.75	
34.	D. handle round point railroad, extra heavy	3	16.50	
35.	L. handle round point shovel, with foot cap	2	16.00	17.00

GRAY'S CAST.

Patent plain back solid-steel shovels and spades.

50.	D. or long handle sq.-point shovels.	2	$12.00	$13.00
51.	" " " " "	3	12.75	14.00
52.	" " " round point "	3	12.75	14.00
55.	D. handle spades	2	12.25	13.25
56.	" " "	3	13.00	14.2

Patent solid corrugated cast steel scoop.

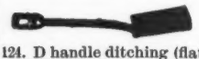
SCOOPS.

Jones' patent plain back solid corrugated cast steel scoops.

90.	D. or long handle solid cast ste l	2	$13.50	$14.50
91.	" " " " "	4	14.50	15.50
91½.	" " " " "	6	16.50	17.50

Jones' riveted scoops.

92.	Cast steel D. or long handle	2	13.50	14.50
93.	" " " "	4	14.50	15.50
94.	" " " "	6	16.50	17.50
			Half polished.	
95.	" " "	8		$20.00
96.	" " "	10		22.50
97.	" " " Locomotive or coal (heavy)	6	17.50	
98.	" Long or D. nandle for salt heavy)		17.50	
99.	" D. handle flour and house furnace		10.50	
100.	" D. handle r'd-pt. for coal (extra heavy)	6	20.00	
101.	" ash pit, furnace L. handle	2		Polished. 13.00
102.	" " " 32 in. D.	2		13.50
103.	" " " 42 " iron D. handle	2		14.00



Ditching spade.

124.	D handle ditching (flat)	18.00	19.50
125.	D handle post hole (concave)	18.00	19.50
126.	D handle Alcock (for clay and brick)	16.00	17.00

Discount on shovels and spades, 50 and 10.
" " scoops, 50.
Boxed f.o.b. New York, Boston or Montreal.
The solid shovels, spades and scoops are made from cast steel bars by a recently patented process, the blade and strap being in one piece, not welded. All goods are American patterns.

Stencil Inks.

Black.

No.	Per can.	Per cake.	No.	Per can.	Per cake.
1.....	7 cents	3 cents	3.....20 cents.		12 cents
2.....10	"	5 "	4.....30	"	20 "

Blue.

.....10 cents.		6 cents	3.....30 cents.		22 cent
.....15	"	9 "	4.....50	"	40 "

Red and Green.

1.....12 cents		8 cents	3.....50 cents.		42 cents
2.....20	"	15 "	4.....90	"	80 "

Per doz. cans or cakes, net, per gross, 20% less.

Indelible Ink.

Small bottles per	100	$2.75
" "	500	12.00
" "	1,000	20.00

STENCIL COMBINATIONS.

Contains Alphabet, Figures, Brush, and Ink.

½ inch, per doz		$4.80
¾ " "		5.40
1 " "		5.40
1¼ " "		7 50
1½ " "		8.40
1¾ " "		10.00
2 " "		10.00
2½ " "		15.00

Dis., 20%.

Tools. ARTISANS.

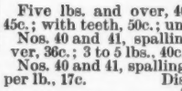
Chisel (Mason).

Stone, 5 and 8c. lb., net.

Mill Picks.
Cast steel, 2 to 3 lb. $22 per doz.
Dis., 60 and 5%.

Stone Axes, Cast Steel.
All sizes, 50c. per lb.
Dis., 70 and 10%.

Five lbs. and over, 40c.; with teeth, 45c.; 3 to 5 lbs., 45c.; with teeth, 50c.; under 3 lbs., 50c.; with teeth, 55c.
Nos. 40 and 41, spalling or stone hammer, 5 lbs. and ver, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Nos. 40 and 41, spalling hammers, 9 to 20 lbs., steel face per lb., 17c. Dis., 70 and 10%



Ship or Top Mauls, Steel Fac 4 to 8 lbs., 28c. per lb.
Dis., 50, 10 and 5%..

Steel Wedges, wood, 1s qual., 5c. lb.

Cooper Froes.

8 in..	doz.	$13.00
10 in..	doz.	13.50
12 in..	doz.	14.00
14 in..	doz.	14.56
16 in..	doz.	15.00

Discount, 60%.

days, 2% 10 days.

Vise.

No 1. Solid Box Vises.

		Each.
No. 25, 3⅜ in.	Jaw	$12.00
" 30, 3½	"	11.00
" 55, 3⅝	"	10.00
" 40, 4	"	10.50
" 45, 4¼	"	11.00
" 50, 4½	"	11.50
" 55, 4½	"	12.00
" 60, 4½	"	13.00
" 65, 4¾	"	14.00
" 70, 5	"	15.00
" 75, 5	"	16.00
" 80, 5¼	"	17.50
" 85, 5¼	"	18.50
" 90, 5½	"	20.00
" 95, 5¾	"	21.00
" 100, 6	"	22.00
" 105, 6	"	23.00
" 110, 6¼	"	24.00
" 115, 6¼	"	25.00
" 120, 6½	"	26.00
" 125, 6½	"	27.50
" 130, 6¾	"	29.00

		Each.
No. 135, 6¾ in.	Jaw	$31.50
" 140, 7	"	33.00
" 145, 7	"	35.00
" 150, 7	"	36.00
160, 7¼	"	41.50

		Each.
No. 170, 7¼ in.	Jaw	$44.50
" 180, 8	"	47.00
" 190, 8	"	53.00
" 200, 8	"	56.00

Dis., 60 and 10%.

MINERS.

Adze Eye Coal Picks.
Same list and dis. as No. 16.

Anthracite Coal Picks.
Same list and dis. as No. 16.

Stone Picks, per doz.
No. 18, 6 to 7 lbs...$16.50.
No. 18, 7 to 8 lbs... 17.50.
No. 18, 8 to 9 lbs... 18.50.
Dis., 60 and 10%.

Coal Picks.

No.	Weight, 2 lbs		Per doz.
16,	"	2½ "	$8.50
16,	"	3 "	9.00
16,	"	3½ "	9.50
16,	"	4 "	10.00
16,	"	4½ "	10.50
16,	"	5 "	11.00
16,	"	5½ "	11.50
16,	"	6 "	12.00
16,	"	6½ "	12.50
16,	"	7 "	13.00
16,	"	7½ "	14.00

Packages charged at cost. Dis., 60, 10%.

Adze Eye Miners Picks—Surface. Drifting and Poll.

No.			Per doz.
19,	Surface.	No. 1, 4 lbs:	$14.00
19,	"	No. 2, 4½ "	15.00
19,	"	No. 3, 5 "	16.00
19,	"	No. 4, 5½ "	17.00
19,	"	No. 5, 6 "	18.00
19,	"	No. 6, 6½ "	19.00
19,	"	No. 7, 7 "	20.00
20,	Drifting,	No. 1, 3 "	12.50
20,	"	No. 2, 4 "	14.00
20,	"	No. 3, 4½ "	15.00
20,	"	No. 4, 5 "	16.00
20,	"	No. 5, 6 "	17.50
21,	Poll,	No. 1, 3½ "	15.00
21,	"	No. 2, 4 "	16.00
21,	"	No. 3, 4½ "	17.00
21,	"	No. 4, 5 "	18.50
21,	"	No. 5, 6 "	20.00
21,	"	No. 6, 6¾ "	21.50

Dis., 60, 10 and 5%.

Tamping Picks.

Adze eye, 6 to 7 lbs., per doz., $17.

Adze eye, 7 to 8 lbs., per doz., $18.

Adze eye, 8 o 9 lbs., per doz., $19.

Hunt eye, 6 to 7 lbs., per doz., $17.

Hunt eye, 7 to 8 lbs., per doz., $18. Hunt eye, 8to 6 lbs., per doz., $19. Dis., 60, 10 and 5%.

Ore Picks.

54,	Adze Eye, 5 to 6 lbs.	₱ doz. $12.00
54,	" 6 to 7 "	" $13.00
54,	" to 8 "	" $14.00

56, Steel Lake Superior Mining Pick.

Special Price and Quality.)

Dis, 60, 10 and 5%.

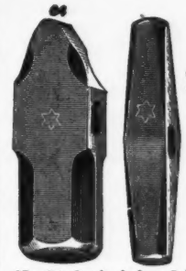
Steel Face Hammers.

No. 43, hand drilling hammers, 2 to 5 lbs.; No. 45, na p ping hammers, 2 to 5 lbs.; No. 39, mason hammers, 3 to 8 lbs.; No. 42, smiths' hand hammers, 2 to 5 lbs.; No. 44, smiths' striking hammers, 2 to 5 lbs., all steel face, per lb., 26c. Dis., 70, 10 and 5%.

No. 43, hand drilling hammer, 5 lbs. and over, 36c.; 3 to 4 lbs.. 46c.; under 3 lbs., 45c. per lb.
Dis., 70, 10 and 5%.

Cast Steel.

No. 42, blacksmiths hand hammer, 5 lbs. and over 30c.; 3 to 5 lbs., 34c.; under 3 lbs., 45c. per lb.
No. 44, drilling or striking hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 33c.; under 3 lbs., 45c. per lb.
No. 45, napping hammer, 5 lbs. and over, 30c.; 3 to 5 lbs. 35c. under 3 lbs., 45c. per lb.
Dis., 70 and 10% 5.



Steel Face Sledges.
No. 34. Smiths' sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 35. Stone sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 36. Striking sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 37. Coal sledges, 5 to 10 lbs., steel face, 18c. per lb.

Cast Steel Sledges.
No. 34. Blacksmiths' sledge. 5 lbs. and over, 30c.; 3 to 5 lbs.. 36c.; under 3 lbs., 45c. per lb,
No. 35. Stone sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 36. Striking sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 37. Coal sledge, 5 lbs. and over, 30c.; 3 to 5 lbs. 36c.; under 3 lbs., 45c. per lb.

RAILROADS.

Railway Track Punch

Round Point.
15c. lb., net.

Tr ck Wrench.

7¾ lb., net.

Ra Fork.

9c. lb. net.

Crow Bars.
Wedge Points, 3½c. lb., net.
Pinch Point, 3 ½c. lb., net.

65 Tamping Bar, 6c. lb., net.

66 Claw Bar,
7c. lb., net.

Railroad Spike Mauls
6 to 16 lbs., Steel Face
18c. lb.

Dis., 50, 10, and 5%.

Steel Track Chisel,
15c. per lb., net.

Railroad or Clay Picks.

No.			Per doz.
11,	Adze eye,	4 to 5 lbs	$11.00
11,	"	5 to 6 "	12.00
11,	"	6 to 7 "	13.00
11,	"	7 to 8 "	14.00
11,	"	8 to 9 "	16.00
11,	"	9 to 10 "	18.00
12,	Hunt eye,	4 to 5 "	11.00
12,	"	5 to 6 "	12.00
12,	"	6 to 7 "	13.00
12,	"	7 to 8 "	14.00

Dis., 60, 10 and 5%.

Mattocks—Price per doz.
2, Adze Eye, Long Cutter, 6 lbs., $16.00.
3, Adze Eye, Short Cutter, 5½ lbs., $15.50.
2, Adze Eye, Long Cutter, Light, $15.00.
3, Adze Eye, Short Cutter, Light, $15.00.
4, Hunt Eye, Long Cutter, 6 lbs., $16.00.
5, Hunt Eye, Short Cutter 5½ lbs., $15.50.

Adze Eye Pick Mattocks.....$16.

Hunt Eye Pick Mattocks.....$16

Dis., 60, 10 and 5%

No. 2, 4 lbs., ₱ doz., $11.50.
Western Pattern, No. 3, 4½ lbs., ₱ doz., $12.
Baltimore Pattern, No. 1, 3½ lbs., ₱ doz., $11.
Baltimore Pattern, No. 2, 4½ lbs., ₱ doz., $11.75
Baltimore Pattern, No. 3, 5 lbs., ₱ doz., $12.75.
Baltimore Pattern, No. 4, 5¾ lbs., ₱ doz., $13.75.
Dis., 60 and 10%, 5.

Grub Hoes.
Western Pattern, No. 0, 3 lbs., ₱ doz., $10.50.
Western Pattern, No. 1, 3½ lbs., ₱ doz., $11.
Western Pattern

CARPENTERS'.

BEADER (Universal Hand.)
For Beading, Reeding, Fluting, or for light Rou eriig.
No. 66. Iron Stock, with seven Steel Cutters, 1.00.

BOXWOOD RULES.
Two feet, four-fold, 1 inch wide.

Plate.	Middle.	Edge.	Bound.
Round joint	$4	...	...
Square "	5	$7	$15
Arch "	6	8	16

Two feet, four-fold, 1⅝ inches wide.

Plate.	Middle.	Edge.	Bound.
Square joint	$7	$9	$18
Arch "	9	11	20

Two feet, two-fold, 1½ inches wide.

Square joint.	Arch.	Arch Bound.
$5	$7	$16
12	14	24

Gunter's Slide.
Dis. 80, 10 and 10%.

LEVELS.

	10 to 16 in.	18 to 24 in.
Arch top plate, 2 side views	$9.00	$12.00

PLUMBS AND LEVELS.
Arch top plate, 2 side views.

	12 to 18 in.	18 to 24 in.	24 to 30 in.
Polished	$14.00	$16.00	$18.00
Mahogany	....	16.50	22.50
Mahogany tp'd and lp'd	27.00	.....	.....
Polished and 1 pped	.....	.....	24.00
Polished and tipped	.....	.....	28.00
Polished, lip'd and tip'd	.....	.....	35.00

	in.
Mason's level, 2 plumbs, polished,	36, $30.00
Mason's level, 2 plumbs, p'd and t'd,	36, 36.00
Mason's level, 2 plumbs, polished,	42, 36.00

PATENT ADJUSTABLE PLUMBS AND LEVEL.

Arch Top plate, 2 side views	26 to 30 in.
Polished and lipped	$27.00
Polished and tipped	30.00
Polished, lipped and tipped	39.00
Mahogany	27.00
Mahogany, lipped	33.00
Mahogany, lipped and tipped	48.00
Polished, triple stock, lipped and tipped	48.00
Mahogany " "	60.00
Rosewood, lipped and tipped	90 00

Dis., 70, 10, 10%

POCKET LEVELS.

Iron top, Japanned	2 00
Brass top	3.00

Dis., 70, 10, 10%.

BAILEY'S PATENT WOOD PLANES.

Smooth.	Handle smooth.	
9 × 8¾ in.	8 × 2 in.	9 × 2 in.
$2	$2	$2.50 each

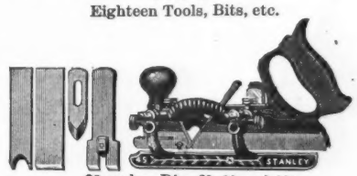
Jack.	Fore.	Jointer.
15 × 2⅜ in.	20 × 2⅜ in.	26 × 2⅜ in.
$2.50	$2.75.	$3.25 each

Dis., 40, 10 and 10%.

PLANES, BAILEY'S PATENT IRON.
With pat. lateral adjustment.

Smooth, 8 n. × 1¾ in., $3; in. × 2 in., $3.25; 10 in. × 2⅜ in. $3.75 each.
Jack, 14 in. × 2 in., $3.75.
Fore, 18 in. × 2⅜ in., $4.75
Jointer, 24 n. × 2⅜ in., $6.50 each.
Dis., 40, 10 and 10 %.

STANLEY'S BEADING, RABBET, SLITTING AND MATCHING PLANE.
Eighteen Tools, Bits, etc.



$8 each. Dis., 20, 10 and 10%.

STANLEY IRON BLOCE PLANES.

3½ × 1 in.
20c.
5½ × 1¼
40c.
7½ × 1¾ in.
60c. each

ADJUSTABLE

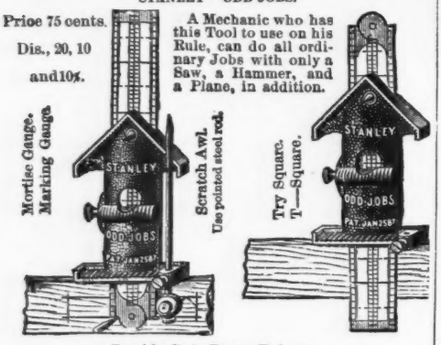
5½ × 1¼ in.
60c.
7½ × 1¾ in.
85c. each.
Dis., 40, 10 and 10 %.

STANLEY "ODD JOBS."

Price 75 cents.

Dis., 20, 10 and 10%.

A Mechanic who has this Tool to use on his Rule, can do all ordinary Jobs with only a Saw, a Hammer, and a Plane, in addition.



Double Gate Brass Valves.
Gland in packing box.

Size.	Screw socket.	Flange.	Diameter of Standard Flange.	Face to face of Screw socket	Face to face of Flanges.	Extra for slide stem and lever subject to discount.
In.	$	$	In.	In.	In.	
½	1.25	.....	.....	2¼	.....	$1.00
¾	1.65	.....	.....	2½	.....	1.00
1	2.15	.....	.....	2⅝	.....	1.00
1¼	3.15	.....	.....	3⅛	.....	1.00
1½	4.25	.....	.....	3¾	.....	1.00
2	6.25	11.50	6	4½	4½	1.00
2½	11.50	18.00	6½	4 13-16	5⅜	1.25
3	16.00	22.00	7	5	6¼	1.25
3½	21.00	31.00	7½	.....	.....	1.25
4	35.00	45.00	9	.....	7 1-16	1.25
5	52.00	64.00	10	.....	.....	1.25
6	78.00	90.00	11	.....	9	1.25
8	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	.....
12	.....	.....	.....	.....	.....	.....

Rubber-Faced Slide Gate Fire Hydrant.

Diameter of pipe connection.	Diameter of stand pipe.	Diameter of seat ring.	One 2½ nozzle.	Two 2½ nozzles.	Three 2½ nozzles.	Four 2½ nozzles.	Six 2½ nozzles.	One steamer nozzle.	One steamer and one 2½ nozzle.	One steamer and two 2½ nozzles.	Frost case, standard length.
Inches.	Inches.	Inches.									
3 or 4	4⅝	3	$28	.....	.....	.....	.....	.....	.....	.....	$4.50
3–4–6	5¾	4	31	$33.00	$35.00	.....	.....	$33.00	$35.00	$37.00	5.00
4 or 6	7	5	.....	38.50	40.50	.....	.....	38.50	40.50	42.50	6.50
6 or 8	8	6	.....	49.00	51.00	$53.00	.....	49.00	51.00	53.00	7.50
8 or 10	10	8	.....	.....	.....	.....	.....	.....	.....	.....	.....

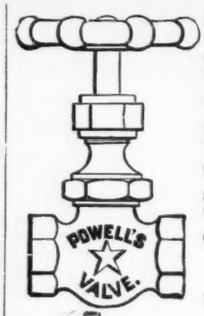
For each 6 inches more or less than standard length of stand pipe, add or deduct from list.	For each 6 inches more or less than standard length of frost case, add or deduct from list.	Extra charge for hub.	Independ't nozzle gates each.
$0.60	$0.44	.....	.....
.75	.50	6 in. $0.50	$3.50
.85	.70	No ch'ge	3.75
1.00	.90	8 in. $1.25	3.75
.....	.....	.....	4.50

EDDY VALVES.

Class 1. Class 2. Class 3 and 4.

Class 1. Brass valves, steam metal. Size in inches.	Screw ends.	Flange ends.	Class 2. Iron, brass mounted. Size.	Screw, or flange ends.	Add for S S&L	Class 3. All ir'n for gas. Hub ends.	Class 4. Water works valves. Hub ends.
¼	$1.30	.....	⅜	$7.00	$1.00	$8.00	$10.00
¾	1.70	.....	2½	10.50	1.30	.....	.....
1	2.20	.....	3	13.00	1.40	10.00	15.00
1¼	3.20	.....	3½	16.50	1.50	.....	.....
1½	4.20	$7.50	4	18.00	1.70	15.00	18.00
2	6.20	9.00	4½	22.00	1.80	.....	.....
2½	11.50	15.00	5	25.00	2.00	20.00	25.00
3	16.00	20.00	6	31.00	2.30	25.00	31.00
3½	22.00	28.00	7	37.00	2.70	30.00	37.00
4	35.00	42.00	8	45.00	3.00	35.00	45.00
5	50.00	60.00	10	60.00	3.50	48.00	60.00
6	80.00	90.00	12	80.00	4.00	65.00	80.00
8	130.00	130.00					

All Iron Valves, Class 2. 10 per cent. less than Brass Mounted.



Star Globe, Angle and Check Valves.

Size, inches.	⅛	¼	⅜	½
Globe and angle	.80	.85	.90	1.20
Check V	.70	.70	.75	.95
Size	¾	1	1¼	1½
Globe and angle	1.55	2.00	3 00	4.00
Check V	1.20	1.65	2.50	3.25
Size	2	2½	3	
Globe and angle	6.50	12 50	19.00	
Check V	5.00	11.00	15.00	

Dis., 60%

Also made heavy and extra heavy for special uses.

Star Sight Up-Feed Lubricator.

Class A.

	⅛ pt.	½ pt.	1 pt.	1 qt.	½ gal
Capacity,					
Finished	5.60	7.00	8,75	11.25	16.25
Plated	6.25	7.50	9.50	12.50	17.50

Dis., 50%.

Signal Sight Feed Oiler.

Numbers	0	1	1½	2
Diameter of glass, inches	1¼	1½	1¾	2
Height of glass, inches	1⅛	1⅜	1⅝	1⅞
Capacity	½ oz.	¾ oz.	1 oz.	oz
Size of shank, pipe thread, inches	¼	¼	⅜	⅜
Signal Sight Feed Oiler, each	$3.00	$3.25	$3.50	$3.75
Signal Sight Feed Oiler, nickel plated, each	3.50	3.75	4.00	4.25
Numbers	3	4	5	6
Diameter of glass, inches	2¼	2½	3	3½
Height of glass, inches	2⅛	2¼	2¾	4
Capacity	¼ pt.	⅓ pt.	½ pt.	1 pt.
Size of shank, pipe thread, inches	¾	½	½	½
Signal Sight Feed Oiler, each	$4.25	$5.25	$7.25	$9.25
Signal Sight Feed Oiler, nickel plated, each	4.75	5.75	8.00	10.25

Less 65% dis.

Varnish.

For Finishing Coats.	gal.
Wearing body varnish	$5.50
Medium drying body	5.50
One coat coach varnish	4.50
Wearing carriage	4.50
Heavy gear varnish	4.00
Coach body "	4.00
No. 1 coach "	2.25

For Under Coats.			
Hard drying body	$4.50	Black rubbing varnish	$4.00
Rubbing body varnish	4.00	Priming (1st coat)	2.50
Quick rubbing "	3.50	Filling (2d coat)	2.50
		Rough stuff	2.50

For Inside Work.			
Best flowing varnish	$4.50	Hard oil finish light	$2.75
Best polishing "	4.50	" dark	2.25
Cabinet "	3.00	White copal	4.00

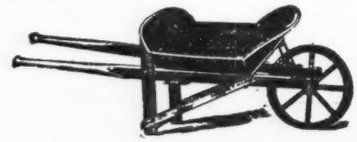
Dryers.			
Japan gold size	$3.50	Brown japan	$1.25
Coach japan	1.75	Liquid dryer	4.25

Discount, 40 per cent. f.o.b. N. Y.

Preservative Coatings.			
Spar coatings	$4.00	Exterior car coating	$4.00
I. X. L. No. 1	2.50	Interior car coating	3.25
I. X. L. No. 2	4.00	Locomotive coating	4.00
Floor finish	2.50		

Discount, 35 per cent, f.o.b. N. Y.

Wheelbarrows.



Climax Bolted Barrow, with Wood Wheel per doz. $22.50.
1½ tire of iron.

Common Nailed Barrow per doz. $18.50.
" Bolted " " 18.75.

Lansing's Patent Iron-Bolted Barrow, per doz.,				$25.50
Capital Patent Bolted Dirt	"	"	"	30.00
Red oak or Government	"	"	"	40.50
Wharf	"	"	"	72.50
Mortar	"	"	"	30.00
Bent Handle Stone	"	"	"	48.00
Coal or Ore	"	"	"	31.50
Pig Metal or Casting	"	"	"	40.50
Brick Yard 20 inch Iron Wheel	"	"		10 50

Globe Patent Bolted Garden Barrow, Box 30 by 24 by 12 deep, wood wheel } per doz., 42.50.

Capita Patent Barrows

With Iron Tray, A, per doz., ... $39.00
" " B, " " 42.00

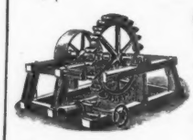
The Leader Iron and Steel Barrows.
Gas-pipe Legs and Handles in one price.

No. 1 Tray of 16 iron, capacity 3 cu. ft. of earth, each $12.
No. 2 " 14 " " 5 " " " "
or 250 lbs. of coal ..... " 15
Galvanized 18 iron, capacity same as No. 2. ..... " 15

Water Wheels.

Pelton.

Standard wheels.



ft.	Under heads of: 50 ft.	250 ft.	500 ft.
3	5.9 H.P. $220	66.7 H.P. $280	188 H.P. $390
4	10.6 H.P. $285	118.5 H.P. $375	335 H.P. $540
5	16.6 H.P. $350	185 H.P. $450	524 H.P. $775
6	23.9 H.P. $400	266 H.P. $550	755 H.P. $1,000

Dis., 10%.

Whiffletree.

Willson spring (Jeffery Manufacturing Company).

	Single.	Double.
No. 1, 34 or 36 inches long	$1.25	$2.50
No. 2, " " "	1.40	2.75
No. 3, " " "	1.50	3.00
No. 4, " " "	1.65	3.25

Including either steel hooks or rings
Discount, 45 and 5%.

Whims—Horse.

Common-sense Steel.
F. O. B $125
Dis., 25%., in car lots.

Windmills.

10 ft., pumping	$75	Plus cost of packing.
12 ft. "	95	
14 ft. "	140	
16 ft. "	225	

Dis., 50 per cent.
Delivered on board of vessel at New York packed for export.
Dis., 45%.

"Stover" Pumping Windmills (no tower).

Size wheel.	Wt. packed.	Cubic ft.	Price.
10 ft.	650	50	$80.00
12 ft.	750	58	100.00

"Zenith Pumping Windmills (no tower).

10 ft.	650	48	85.00
12 ft.	750	57	110.00

Dis., 50 per cent.

14 ft.	1,400	108	160.00
16 ft.	1,600	114	250.00

Dis., 45 per cent.

20 ft.	2,950	220	400.00
25 ft.	4,225	280	600.00

Dis., 40 per cent.

"Zenith" Geared Windmill (no tower).

Prices include upper set of Gears and about 5 feet vertical extra heavy shaft in windmill head.

14 ft.	1,550	178	260.00
16 ft.	1,780	198	300.00
20 ft.	3,170	216	500.00

Dis., 40 per cent.

Wire Rope.

Circumference in inches.	Diameter in inches.	Price in cents per foot best crucible cast steel rope. 19 wires to strand.	7 wires to strand.	Price in cents per foot best bright iron rope. 19 wires to strand.	7 wires to strand.	Price in cents per pound galvanized iron rope. 12 wires to strand.	7 wires to strand.
5½	1¾	100	.....	69	.....	11	10½
5¼	.....	90	.....	64	.....	"	"
5	1⅝	80	.....	58	.....	11½	"
4¾	1½	71	.....	53	.....	"	"
4½	.....	65	.....	48	.....	"	"
4¼	1⅜	60	60	43	39	"	"
4	1¼	50	50	36	34	"	"
3¾	.....	46	.....	33	.....	"	"
3½	1⅛	41	40	29	27	12	10¾
3¼	.....	.....	.....	.....	.....	"	11
3⅛	1	34	32	26	23	.....	.....
3	.....	33	.....	24	.....	"	11
2¾	⅞	27	25	20	19	.....	12
2½	.....	23	.....	18	.....	.....	13
2¼	¾	21	19	16	14	.....	
2	⅝	18	14	14	10½	....	
1¾	9-16	17	11	12	8	.....	
1½	½	15	8	10	7	.....	
1¼	⅜	.....	.....	8	5	.....	
1	5-16	.....	.....	.....	4	.....	

Discounts, for export in bond, requiring from six weeks time, 55%.